THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR OCTOBER 1869.

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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed for publication to it *exclusively*. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of November.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors, *if the request for them be made when the communication is sent.*

Communications postponed for want of room shall receive early attention.

Dr. GILMAN DAVEIS requests us to state that there is an error in the formula for the iodide of potassium mixture used by him as given in our last number, page 76. It should read: ℞.—Potassii iodidi ℥ss; syr. sarzæ, aquæ, āā ℥iij.

The following works have been received:—

The Nomenclature of Diseases. Drawn up by a Joint Committee appointed by the Royal College of Physicians of London. London, 1869. (From the College.)

The Pathology and Treatment of Stricture of the Urethra, and Urinary Fistulæ. By Sir HENRY THOMPSON, F. R. C. S., Surgeon-Extraordinary to H. M. the King of the Belgians, Prof. of Clinical Surgery and Surgeon to University College Hospital. Third edition. London: John Churchill & Sons, 1869. (From the Author.)

On the Injection of Ammonia into the Circulation: being a Paper read before the Medical Society of Victoria, April 7, 1869. By GEORGE B. HALFORD, M. D., Prof. of Anatomy, Physiology, and Pathology in the University of Melbourne.

Dictionnaire Annuel des Progrès des Sciences et Institutions Médicales suite et Complement de tous les Dictionnaires par M. P. GARNIER. Précédé d'une Introduction par M. le Docteur AMÉDÉE LATOUR. Paris: Germer Baillière, 1869.

Congrès Médical de toutes les Nations. 2e Session de 1869 à Florence. Statut et Programme. Naples, 1869.

The Science and Art of Surgery: being a Treatise on Surgical Injuries, Diseases, and Operations. By JOHN ERIC ERICHSEN, Senior Surgeon to University Coll. Hosp., and Holme Prof. of Clin. Surg. in University Coll., London. From the fifth enlarged and carefully revised London edition. Illustrated with six hundred and thirty engravings on wood. With Additions by JOHN ASHHURST, Jr., A.M., M.D., Vice-President of the Philadelphia Pathological Society, F.C.P., Surgeon to the Episcopal Hospital, etc. etc. Philadelphia: Henry C. Lea, 1869.

The Mechanism of Dislocation and Fracture of the Hip, with the Reduction of the Dislocations by the Flexion Method. By HENRY J. BIGELOW, M. D., Prof. of Surgery and Clinical Surgery in Medical School of Harvard University, Surg. of Mass. Gen. Hosp., etc. etc. With illustrations. Philadelphia: Henry C. Lea, 1869.

A Manual of Elementary Chemistry, Theoretical and Practical. By GEORGE FOWNES, F. R. S., late Prof. of Practical Chemistry in University College, London. From the tenth revised and corrected English edition. Edited by ROBERT BRIDGES, M.D., Prof. of Chemistry in the Philadelphia College of Pharmacy. With one hundred and ninety-seven illustrations. Philadelphia: Henry C. Lea, 1869.

A Course of Practical Chemistry, arranged for the use of Medical Students. By WILLIAM ODLING, M. B., F.R.S., F R.C.P., Lecturer on Chemistry at St. Bartholomew's Hospital. With illustrations. From the fourth and revised London edition. Philadelphia: Henry C. Lea, 1869.

Circular No. 2. War Department, Surgeon-General's Office, Washington, January 2, 1869. Report on Excisions of the Head of the Femur for Gunshot Injury.

Treatment of Lachrymal Affections. By Prof. ARLT, Prof. of Ophthalmology at the University of Vienna. Translated by JOHN F. WEIGHTMAN, M. D. Philadelphia: Lindsay & Blakiston, 1869.

Fœticide, or Criminal Abortion: a Lecture Introductory to the Course on Obstetrics, and Diseases of Women and Children, University of Pennsylvania, Session 1839-40. By HUGH L. HODGE, M. D. Philadelphia: Lindsay & Blakiston, 1869.

The Physician's Visiting List for 1870. Philadelphia: Lindsay & Blakiston.

The Jurisprudence of Medicine in its Relations to the Law of Contracts, Torts, and Evidence, with a Supplement on the Liabilities of Vendors of Drugs. By JOHN ORDRONAUX, LL. B., M. D., Prof. of Med. Jurisprudence in Law School of Columbia College, New York, etc. etc. Philadelphia: T. & J. W. Johnson & Co., 1869.

The Membrana Tympani in Health and Disease. Illustrated with twenty-four chromo-lithographs. Clinical Contributions to the Diagnosis and Treatment of Diseases of the Ear, with Supplement. By Dr. ADAM POLITZER, of the University of Vienna. Translated by A. MATHEWSON, M. D., and H. G. NEWTON, M. D., Asst. Surg. of the Brooklyn Eye and Ear Hospital, Mem. of Am. Ophthalmol. and Otol. Societies. New York: Wm. Wood & Co., 1869.

A Text-Book of Practical Medicine, with Particular Reference to Physiology and Pathological Anatomy. By Dr. FELIX VON NIEMEYER, Prof. of Pathol. and Ther., Director of the Medical Clinic of the University of Tübingen. Translated from the seventh German edition, by special permission of the author, by GEORGE H. HUMPHREYS, M. D., one of the Physicians to the Bureau of Med. and Surg. Relief at Bellevue Hosp. for the Out-door Poor, etc., and CHARLES E. HACKLEY, M. D., one of the Physicians to the New York Hospital, one of the Surgeons to the New York Eye and Ear Infirmary, etc. 2 vols. New York: D. Appleton & Co., 1869.

Electricity in its Relations to Practical Medicine. By Dr. MORITZ MEYER, Royal Counsellor of Health, etc. Translated from the third German edition, with Notes and Additions, by WILLIAM A. HAMMOND, M. D., Prof. of Diseases of Mind and Nervous System, and of Clinical Medicine, in Bellevue Hosp. Med. Coll., etc. etc. New York: D. Appleton & Co., 1869.

Resources of the Southern Fields and Forests, Medical, Economical, and Agricultural; being also a Medical Botany of the Southern States, with Practical Information on the Useful Properties of the Trees, Plants, and Shrubs. By FRANCIS PEYRE PORCHER, M. D., formerly Surgeon in Charge of City Hospitals, Charleston, and Lecturer on Materia Medica and Therapeutics, etc. etc. New edition, revised and largely augmented. Charleston: Walker, Evans & Cogswell, 1869.

On the Etiology of Bright's Disease, with Remarks on the Prophylaxis. By GOUVERNEUR SMITH, M. D., Fell. of New York Acad. of Med., Phys. to New York Hosp. New York: Baillière Brothers, 1869.

Physiological Arrangement of the Cranial Nerves. By EDWARD RIVES, M. D. Cincinnati: Robert Clarke & Co.

The Principles of Naval Staff Rank, and its History in the United States Navy for over Half a Century, By a Surgeon in the U. S. Navy. 1869.

Prescription and Clinic Record. New York: Wm. Wood & Co., 1869.

A Case of Herpes Zoster Ophthalmicus in a Patient Eighty Years of Age, causing Fatal Prostration; with Remarks. By B. JOY JEFFRIES, A. M., M. D., Ophthalmic Surg. to Mass. Char. Eye and Ear Infirmary, Boston, etc.

Carbolic Acid, its Surgical and Therapeutical Uses. A Paper read before the Cincinnati Academy of Medicine, June 7, 1869. By WM B. DAVIS, M.D. Cincinnati, 1869.

List of Medical Officers, United States Army, with their Stations, as reported to the Surgeon-General of the Army, July 1, 1869.

Hygiene in its Relations to Therapeusis. By ALFRED L. CARROLL, M. D., Mem. of Nat. Instit. of Letters, Arts, and Sciences, etc. New York, 1869.

Plain Rules for the Restoration of Persons apparently Dead from Drowning, as taught under the Auspices of the Metropolitan Board of Health of the City of New York. By BENJAMIN HOWARD, A M., M. D , Prof. of Clin. and Oper. Surg. and Surg. to the Long Island Coll. Hosp., N. Y., etc. etc. New York: E. B. Treat & Co., 1869.

Puerperal Eclampsia. By C. C. F. GAY, M. D.

Carbolic Acid: its Action and Uses. By CHAS. F. J. SEHLBACH, M. D., of Newark, N. J. Newark, 1869.

Memoranda of University Clinic at Charity Hospital, New Orleans, Session 1868–9. New Orleans, 1869.

Surgery of the Cervix in Connection with the Treatment of Certain Uterine Diseases. By THOMAS ADDIS EMMET, M.D., Surg.-in-Chief of New York State Woman's Hospital. New York, 1869.

Report of the Committee on Obstetrics of the Kentucky State Medical Society. By GEORGE SYNG BRYANT. Louisville, 1869.

Third Annual Report of the Metropolitan Board of Health of the State of New York. 1868. Albany, 1868.

Monthly Report of the Department of Agriculture. Aug., Sept., Oct., Nov., Dec., 1868; Jan., Feb., March, April, May, June, July, 1869.

Reports of the Trustees and Superintendent of the Tennessee Hospital for the Insane. Presented to the General Assembly, November, 1867. Nashville, 1867.

The Relations and Reciprocal Obligations between the Medical Profession and the Educated and Cultivated Classes. An Oration delivered before the Alumni Association of the Medical Department of the University of the City of New York, February 23, 1869. By HENRY S. HEWIT, M. D. New York, 1868.

Annual Address delivered by W. O. BALDWIN, M. D., before the American Medical Association, at New Orleans, La., May 4, 1869. Louisville, Ky., 1869.

Catalogue of Graduates of Jefferson Medical College of Philadelphia, 1826—1869. Philadelphia, 1869.

The Proceedings of the Georgia Medical Association, at the Session of 1868, held at Augusta, Ga. Augusta, 1868.

Transactions of the Twentieth Annual Meeting of the Georgia Medical Association, held in the City of Savannah, April, 1869. Savannah, 1869.

Transactions of the Indiana State Medical Society, at its Nineteenth Annual Session, held at Indianapolis, May 19 and 20, 1869. Indianapolis, 1869.

Transactions of the Vermont Medical Society, for the Years 1867 and 1869. Burlington, 1869.

The Minutes of the Thirty-sixth Annual Session of the Tennessee Medical Society. Nashville, 1869.

Transactions of the Medical Society of the State of Pennsylvania, at its Twentieth Annual Session, June, 1869. Philadelphia, 1869.

Transactions of the Medical Association of the State of Alabama. Annual Session, 1869.

Proceedings of the Academy of Natural Sciences of Philadelphia. January, February, March, and April, 1869.

The following Journals have been received in exchange:—

Archiv der Heilkunde. 1869. Viertes Heft.
Archiv für Anatomie, Physiologie, und Wissenschaftliche Medicin. 1869. Nos. 1, 2, 3.
Deutsches Archiv für Klinische Medicin. Fünfter Band, Fünftes und Sechstes Heft. Sechster Band, Erstes Heft.
Vierteljahrschrift für die Praktische Heilkunde. 1869. Dritter Band.
Bericht über die Fortschritte der Anatomie und Physiologie im Jahre 1868. Zweites und Drittes Heft.
Centralblatt für die Medicinischen Wissenschaften. 1869. Nos. 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 38, 39.
Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle. 1869. Fascicolo 6, 7, 8.
L'Imparziale. 1869. Nos. 13, 14, 15, 16, 17, 1869.
Archives de Physiologie Normale et Pathologique. Juillet, Août, Sept., Oct., 1869.
Revue de Thérapeutique Médico-Chirurgicale. 1869. Nos. 12, 13, 14, 15, 16, 17.
Le Mouvement Médical. 1869 Nos. 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36.
La Santé Publique. 1869. Nos. 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34.
Journal de Médecine Mentale. Juin, Juillet, 1869.
Annales de Dermatologie et de Syphiligraphie. 1869. No. 5.

La Tribune Médicale. Nos. 96, 102. 1869.
The Half-Yearly Abstract of the Medical Sciences. Vol. XLIX. Jan.—June, 1869.
The Retrospect of Medicine. Edited by W. BRAITHWAITE, M. D., and JAS. BRAITHWAITE, M. D. Lond. Vol. LIX. January—June, 1869.
The British and Foreign Medico-Chirurgical Review. July, 1869.
The Medical Times and Gazette. July, August, September, 1869.
The British Medical Journal. July, August, September, 1869.
The Lancet. July, August, September, 1869.
The Practitioner. July, August, September, 1869.
Edinburgh Medical Journal. July, August, September, 1869.
Medical Press and Circular. July, August, September, 1869.
The Glasgow Medical Journal. August, 1869.
Journal of Cutaneous Medicine. July, 1869.
The Indian Medical Gazette. July, August, 1869.
Canada Medical Journal. June, July, August, 1869.
The Dominion Medical Journal. July, August, 1869.
The Boston Medical and Surgical Journal. July, August, September, 1869.
The American Journal of Insanity. July, 1869.
The New York Medical Journal. July, August, September, 1869.
The Medical Record. July, August, September, 1869.
The Quarterly Journal of Psychological Medicine. July, October, 1869.
The American Journal of Obstetrics. August, 1869.
Archives of Ophthalmology and Otology. Vol. 1, No. 1.
The Buffalo Medical and Surgical Journal. June, July, August, 1869.
The Medical Gazette. July, August, September, 1869.
The Medical and Surgical Reporter. July, August, September, 1869.
The Cincinnati Lancet and Observer. July, September, 1869.
The Cincinnati Medical Repertory. July, September, 1869.
The Western Journal of Medicine. July, August, September, 1869.
The Chicago Medical Examiner. July, August, September, 1869.
The Chicago Medical Journal. July, 1869.
The Saint Louis Medical and Surgical Journal. July, Sept., 1869.
The Detroit Review of Medicine and Pharmacy. May, June, July, Aug., Sept, 1869.
The Medical Archives. July, August, September, 1869.
The Leavenworth Medical Herald. July, August, September, 1869.
The Pacific Medical and Surgical Journal. July, August, September, 1869.
The California Medical Gazette. July, August, September, 1869.
The Medical Bulletin. July, August, September, 1869.
The Richmond and Louisville Medical Journal. July, September, 1869.
The New Orleans Journal of Medicine. July, 1869.
The Nashville Journal of Medicine and Surgery. July, August, September, 1869.
The Galveston Medical Journal. April, August, 1869.
The Journal of the Gynæcological Society of Boston. July, August, Sept., 1869.
The American Journal of Pharmacy. July, September, 1869.
The Druggists' Circular and Chemical Gazette. July, August, 1869.
The Journal of Materia Medica. June, July, August, 1869.
The Pharmacist. July, August, Sept., 1869.
The American Journal of Science and Arts. July, September, 1869.
The American Naturalist. July, August, September, 1869.
The Dental Cosmos. July, August, September, 1869.
The American Journal of Dental Science. July, August, Sept., 1869.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

All remittances of money and letters on the *business* of the *Journal* should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.

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OF THE

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1. Clinical Illustrations of various forms of Cancer, and of other Diseases likely to be mistaken for them, with Especial Reference to their Surgical Treatment. By Oliver Pemberton, Surgeon to the General Hospital, Birmingham. London: Longmans, Green, Reader & Dyer, 1867, folio, pp. xviii., 128.

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2. On the Diagnosis and Treatment of Cancer and the Tumours Analogous to it. By Maurice Henry Collis, M. B., F. R. C. S. I., etc. etc. 8vo. pp. xxii., 317. London: John Churchill & Sons, 1864.
3. On Cancer; its Allies and Counterfeits. By Thomas Weeden Cooke, Surgeon to the Cancer Hospital, etc. 8vo. pp. xiv., 226. London: Longmans, Green & Co., 1865.
4. The Antecedents of Cancer. By Charles H. Moore, F. R. C. S., etc. f'cap 8vo. pp. xii., 53. London: T. Richards, 1865.
5. Rodent Cancer, with Photographic and other Illustrations of its Nature and Treatment. By Charles H. Moore, F. R. C. S., etc. Crown 8vo. pp. xvi., 128. London: Longmans, Green & Co., 1867.
6. On the Influence of Inadequate Operations on the Theory of Cancer. By Charles H. Moore, F. R. C. S., etc. (Medico-Chirurgical Transactions, vol. l. p. 245.)
7. The Continuity of Extensive Cancer. By Charles H. Moore. (St. Bartholomew's Hospital Reports, vol. iii. p. 133.)
8. Surgical Cases, Devon and Exeter Hospital. By Philip Chilwell Delagarde. (Ibid., vols. ii., iii., and iv.)
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OF THE MEDICAL SCIENCES

FOR OCTOBER 1869.

ART. I.—*A Contribution to the Clinical History of Variolous Disease occurring in Children and Minors.* By WILLIAM PEPPER, M. D., one of the Physicians to the Philadelphia Hospital.

DURING the early months of the year 1865, a severe epidemic of variola prevailed throughout the city of Philadelphia, and as, at that time, I was Visiting Physician in the Southwestern District of the Philadelphia Dispensary, a large number of cases of the disease came under my care.

A considerable number of adults were attacked, but by far the greater proportion of the cases occurred in children under the age of 15 years. Finding that I had preserved quite full notes of 30 such cases, I have been led to tabulate them, together with 3 cases occurring between the ages of 15 and 20 years, in the hope that the conclusions following from their study might possess some clinical interest.

The following list presents the mere headings of the cases which have served as the basis of the present article :—

	FORM OF DISEASE.	PREVIOUS VACCINATION.	RESULT.
1. Female, æt. 5 mos.,	discrete varioloid, primary,	never,	convalesced on 7th day.
2. Male, " 3 years,	" " "	during incubation, but did not take,	" " 10th "
3. Female, " 4 "	" " "	2 years before,	" " 10th "
4. Male, " 8 "	" " "	in infancy, but did not take,	" " 6th "
5. Female, " 9 "	" " "	in infancy, successfully,	" " 8th "
6. Male, " 11 "	" " "	in infancy, successfully,	" " 12th "
7. Female, " 11 "	" " "	in infancy, successfully,	" " 9th "
8. Female, " 14 "	" " "	at age of 1 yr. successfully,	" " 14th "
9. Male, " 14 "	" " "	not known,	" " 6th "
10. Male, " 15 "	" " "	at age of 5 yrs. successfully,	" " 16th "
11. Female, " 6 mos.,	confluent variola, "	never,	death " 16th "
12. Female, " 9 "	" " "	never,	" " 7th "
13. Male, " 1 year,	" " "	twice, but without taking,	" " 9th "
14. Male, " 1 "	" " "	never,	convalesced " 23d "

		FORM OF DISEASE.			PREVIOUS VACCINATION.	RESULT.
15.	Male, æt. 21 mos.,	confluent	variola,	primary,	5 days before first symptoms, but without success,	convalesced on 17th day.
16.	Male, " 2 years,	"	"	"	never,	" " 15th "
17.	Female, " 2 "	discrete	"	"	never,	" " 16th "
18.	Female, " 3½ "	confluent	"	"	never,	death " 16th "
19.	Male, " 4 "	"	"	"	never,	" " 14th "
20.	Female, " 5 "	discrete	"	"	2 years previously,	convalesced " 15th "
21.	Female, " 6 "	confluent	"	"	never,	" " 21st "
22.	Female, " 7 "	discrete	"	"	in infancy, successfully,	" " 17th "
23.	Female, " 8 "	"	"	"	in infancy, successfully,	" " 18th "
24.	Male, " 8 "	"	"	"	never,	" " 18th "
25.	Female, " 8 "	"	"	"	never,	" " 16th "
26.	Male, " 11 "	confluent	"	"	in infancy, successfully,	" " 20th "
27.	Female, " 12 "	discrete	"	"	never,	" " 24th "
28.	Male, " 13 "	"	"	secondary,	in infancy, successfully,	" " 20th "
29.	Male, " 13 "	confluent	"	primary,	in infancy, successfully,	" " 20th "
30.	Male, " 15 "	"	"	"	at age of 2 yrs. successfully,	" " 21st "
31.	Female, " 18 "	discrete	"	"	at age of 5 yrs. successfully,	" " 21st "
32.	Female, " 18 "	confluent	"	"	in infancy, successfully,	" " 21st "
33.	Male, " 20 "	"	"	"	never,	" " 24th "

Form of Disease.—It will be seen that this list includes 33 cases of variolous disease; 10 of which were cases of discrete varioloid; 9 of discrete and 14 of confluent variola. In all but one case the disease was primary and appeared in the midst of ordinary health. In the single secondary case (No. 28) the attack of discrete variola appeared in a lad of 13 years, during convalescence from a severe attack of typhus fever.

Sex.—There is no acute disease upon which mere sex has less influence than variola. It frequently occurs that in long series of cases the number of patients of either sex is very nearly if not exactly the same—and thus, among the 33 cases tabulated above, there were 16 males and 17 females.

Colour.—Among the 33 cases all but 4 occurred in white children, a fact which is not discordant with the well-known susceptibility of the negro race to the variolous poison, inasmuch as the district of the city in which these cases were observed is peopled almost exclusively by whites. In other portions of the city, where there are numerous negroes, variola was extremely abundant and very severe during the same period.

Constitution.—The constitution and general health of the children was noted in 21 cases; of these 18 are recorded as being of good constitution, 3 as being delicate. The temperament was noted in 17 cases, of which 11 were markedly *lymphatic;* and 6 decidedly, and in two or three instances excessively, *nervous.*

Age.—Unlike sex, the influence of age upon the development and type of variolous disease is strongly marked. The question as to how far this is due to the usual early performance of vaccination will be discussed hereafter. Of the above 33 cases, 5 occurred in children under 1 year of age; 3 in those between 1 and 2 years; 1 between 2 and 3 years; 2 between 3 and 4 years; 2 between 4 and 5 years; 7 between 5 and 10 years; 10 between 10 and 15 years; 3 between 15 and 20 years. Or, in

the first period of 5 years, there were 13 cases; in the second, 7; in the third, 10; and in the fourth, 3.

It is interesting to observe also the relative frequency with which variola and varioloid occur at these respective ages. Of 10 cases of varioloid, 1 occurred in the first year of life (at 5 months); 1 between 2 and 3 years; 1 between 4 and 5 years; 2 between 5 and 10 years; and 5 between 10 and 15 years. While, on the other hand, of 23 cases of variola, 4 occurred in the first year of life (at 5, 9, 12, 12 months respectively); 3 between 1 and 2 years; 2 between 3 and 4 years; 1 between 4 and 5 years; 5 between 5 and 10 years; 5 between 10 and 15 years; and 3 between 15 and 20 years. Or, in other words, variola was three times as frequent in the first two years of life as varioloid; equally frequent between 5 and 10 years; and less than half as frequent between 10 and 15 years.

Leaving aside for the moment the modifying influence of vaccination, we see a ready explanation of the fact that variolous disease is most frequent in the first two or three years of life, and again in the period between 5 and 10 years, in the great susceptibility of very young children who have not been vaccinated, and, on the other hand, in the free exposure to contagion which is furnished children of the latter age in schools and factories.

Vaccination.—When, however, we also take into account the influence of vaccination, it affords an additional explanation of the distribution of these affections with regard to age; while, at the same time, we are enabled to gain a clear idea of the positive value of this proceeding. Thus, we find that of 10 cases of varioloid, it is not known in 1 case whether vaccination had been performed; in 6 it had been performed successfully; in 1 it had been twice performed, but without success; and in 2 cases it had never been performed.

In the 6 cases which had been successfully vaccinated, varioloid occurred at the age of 4, 9, 11, 11, 14, and 15 years; the operation of vaccination having been performed at a distance of about 2, 7, 10, 10, 13, and 14 years respectively. In the case where it had been unsuccessfully performed the child was 8 years old. The only 2 cases of varioloid which occurred under the age of 4 years had never been vaccinated; one of them was, however, vaccinated during the incubation of the disease, but there was not the least local symptom following the insertion. Finally, it remains to be said that all the cases of varioloid were discrete, and recovered speedily without disfiguration.

On the other hand, out of 23 cases of variola 12 had never been vaccinated at all; 1 was vaccinated during incubation, but without effect; 1 had been twice unsuccessfully vaccinated; and 9 had been successfully vaccinated. In these latter cases, the disease occurred at the ages of 5, 7, 8, 11, 13, 13, 15, 18, and 18 years; the operation of vaccination having been performed at a distance of about 2, 6, 7, 10, 12, 12, 13, 13, and 17 years respectively. In 5 of these 9 cases the eruption was discrete; in 4,

it was confluent; in all of them recovery ensued. In the 14 cases which had not been successfully vaccinated, the disease occurred at the age of 6, 9, 12, 12, 21 months; 2, 2, 3½, 4, 6, 8, 8, 12, and 20 years; or, in other words, 9 children between the ages of 6 months and 4 years who had not been protected by vaccination were affected with variola; 5 cases only occurring in unprotected subjects after the latter age. In no case where vaccination had been successfully performed did variola occur under the age of 4 years. Of the 9 cases occurring under the age of 4 years the disease was confluent in 8, with a mortality of 5; and discrete in 1 case, which recovered. All the 5 cases over 4 years of age recovered, the disease being discrete in 4 and confluent in but 1.

In summing up these facts the following conclusions seem obvious:—

1. That vaccination appears to furnish almost complete protection against the occurrence of either varioloid or variola during the first six years of life; the importance of which result is enormously increased by the additional fact that all the fatal cases occurred under 4 years of age.

The only cases which necessitate a modification of the claim for vaccination of absolute protective power during the first 6 years of life are two: Nos. 3 and 20, one of discrete varioloid and one of discrete variola, in both of which vaccination had been performed two years previously. Although, as will be more fully discussed hereafter, there is some reason to assume that in these cases there may have been imperfection in the vaccination, I do not care to insist upon it. In case No. 13, however, where it was stated that vaccination had been twice unsuccessfully performed, and yet fatal confluent variola occurred at the age of twelve months, I can have little doubt that the failure of the operation was due to the employment of inert virus, or to the neglect of proper care on the part of operator or parent.

2. That in subjects not vaccinated, the greatest susceptibility to the variolous poison seems to be during the first two years of life, at which time the form of the disease is very apt to be confluent and in a large proportion of cases fatal. The same tendency for the disease to assume the grave confluent form of true variola in unprotected subjects may be seen, though to a less degree, at all ages: thus, in 16 cases at all ages, where vaccination had never been performed, there were but 2 cases of varioloid, while there were 4 cases of discrete and 10 of confluent variola. Eleven of these cases occurred under 4 years of age, 2 being cases of varioloid, 1 of discrete and 8 of confluent variola; while 5 occurred over 5 years of age, and presented 3 instances of discrete and 2 of confluent variola.

3. That when owing to any cause, whether from possible inertness of virus, imperfect insertion, or idiosyncrasy on the part of the subject, the vaccination fails, the operation should be repeated at short intervals, varying the virus and perhaps the mode of insertion, until success is obtained or all danger of exposure to contagion ceases. And in this latter case (see

No. 4) the attempt should be renewed after a few years' interval, or whenever the least danger of exposure to contagion arises.

4. That in very many cases, however successfully vaccination may have been performed, its protective power becomes exhausted after a number of years. In 15 cases where variolous disease occurred after successful vaccination, the interval was 2 years in 2 cases; 6, 7, and 8 years each in 1 case; and from 10 to 17 years in 10 cases. It would appear from this, that, although there is very little risk when vaccination has preceded the exposure to contagion by so short a period as 2 years, vaccination should still be practised to insure entire immunity, and that the necessity for revaccination becomes more and more urgent with every additional year's interval.

5. That when the protective power of vaccination has thus been in course of time exhausted, the subject may contract any form of variolous disease. Thus, of 15 cases occurring in those who had been successfully vaccinated, 6 were cases of discrete varioloid; 5 were cases of discrete, and 4 cases of confluent variola.

6. That, notwithstanding this possibility, the chances are very much more in favour of an attack of varioloid or a mild form of variola when the subject has been vaccinated successfully, no matter at how long a distance, than if this operation had never been performed. (See Conclusion 2.)

Thus, while of 16 cases occurring in unprotected subjects, there were only 2 cases of varioloid, but 4 of discrete and 10 of confluent variola, we see that of 15 cases which had been previously successfully vaccinated, there were 6 cases of varioloid; 5 of discrete and 4 of confluent variola.

7. That, although the above tables furnish meagre evidence of a positive kind as to the absolute power of vaccination to protect against death from variola, they furnish strong negative evidence in its favour. For we see that among children, unprotected by vaccination, under the age of 4 years, 8 cases of confluent and 1 case of discrete variola occurred with 5 deaths; while among the very much larger number of children of the same age exposed to the same contagion, but protected by previous vaccination, there occurred but two cases of variolous disease, and both of them mild and discrete varioloid.

8. The only observations which bear upon the question of the influence of vaccination performed during the incubation of variolous disease are Nos. 2 and 15; in the first of which it was performed almost two weeks before an attack of discrete varioloid, in a child 3 years old; and in the other, five days before the first symptom of an attack, which proved to be confluent variola, in a boy 21 months old.

There seems no longer room for doubt that, if vaccination is performed during the incubation of variola, at such a time that the vaccine eruption

appears before the variolous, this latter will be modified, and, in the vast majority of cases, favourably.

But there is no reason to suppose that when the vaccine eruption does not make its appearance, as in the two cases here reported, the introduction of the virus modifies in the least degree the ensuing variola. The fact that one of the children so vaccinated was one of the only two cases of varioloid which occurred among 9 cases of variolous disease under the age of 3 years, is probably to be explained on the supposition that there existed so slight a susceptibility that the child would have contracted merely a modified form of variola; and that vaccination would have failed had it been performed several weeks earlier.

In the other case the operation of vaccination preceded the first marked symptoms of variola by only five days, a period too short to afford much hope of impressing the system. It must be added, that during the prevalence of this epidemic of variola, I vaccinated many children who were fully as much exposed to contagion as those whose cases form the basis of this article, and that in no instance, where the operation was successful, nor, in any other than the two above cases, where the system was unsusceptible to the vaccine virus, did the child contract any form of variolous disease.

Finally, it may safely be laid down as a rule of practice, that whenever an individual (especially a child) who has never been vaccinated or only at a distance of two or more years, has been exposed to the contagion of variola, vaccination should be immediately performed, unless it is positively known that the stage of incubation has so far advanced that the vaccine disease will not have time to be developed before the appearance of the variolous eruption, unless, in other words, the initial symptoms of the variolous disease have appeared. It will be remembered that Eichorn recommended the performance of vaccination during the prodromes, or even on the first day of the eruption of variola; but, so far as we are aware, no other observers have found this practice followed by favourable results.

It remains to consider the influence of vaccination upon the probability of disfiguration in any subsequent attack of variolous disease. Among the above cases, there were but three instances in which pitting occurred, no local application having been made with a view to prevent it, but in all of these the disfiguration was marked. Two of them occurred in children, aged 6 months and 6 years respectively, who had never been vaccinated; the third, in a girl of 18 years, who had been vaccinated successfully 17 years before. In two other cases, very slight disfiguration occurred despite the use of local applications; one of them was a lad, aged 18 years, who had been vaccinated 13 years before; the other a lad, aged 20 years, who had never been vaccinated.

It will be observed that in the arrangement of the list of cases, the form of the disease has served as the only basis of division, and the question of previous vaccination has been entirely neglected. It is true, that many authors

limit the use of the word varioloid to the cases of variolous disease occurring in those who have been previously vaccinated; while some others include in addition the rare second attacks of variolous disease, whether the first attack has been caused by contagion or inoculation. It appears, however, that if by the term variola we intend to indicate a general disease characterized by certain definite symptoms, and running a definite course; and by the term varioloid, a general disease manifesting essentially the same symptoms as variola, but presenting important modifications of some of them; we should apply these terms to the corresponding groups of phenomena under whatever circumstances they may appear.

Thus we have applied the name Variola to all cases, whether occurring in those who had previously been vaccinated or not, in which the eruption developed regularly and passed through the various stages of the true variolous pock, in which the secondary fever was marked, and the duration of the case, unless cut short by death, was from fifteen to over twenty days, dating from the initial symptoms to early convalescence.

And, on the other hand, the name Varioloid has been applied to all cases, whether occurring in those who had previously been vaccinated or not, in which the eruption developed irregularly, its different stages being imperfectly marked and short, in which the secondary fever was either absent or slight, and in nearly all of which convalescence occurred within two weeks.

The degree of susceptibility of the system to the variolous poison is the all important question, and if this be very marked (no matter whether vaccination have never been performed, or, having been performed, its protective influence has to a great extent passed away), the resulting disease may present all the phenomena of grave variola, and is surely entitled to that name. Nor is this question merely a theoretical one; for the application of the name varioloid to all forms of variolous disease occurring after vaccination, certainly tends to create the impression that all such cases are necessarily mild, that their duration will be comparatively short, and that the eruption in particular will run through its stages rapidly, and leave no disfiguration. A glance at the symptoms in Nos. 28, 29, 31, 32, in all of which vaccination had been successfully performed in infancy, would suffice to show how extremely severe variola may be under such circumstances; and I regret to be able to quote No. 31 as a proof that previous vaccination is no sure protection against marked disfiguration in a subsequent attack of variola. When this case was first seen, the eruption was too far advanced to admit of any local applications to prevent pitting; but I am cognizant of at least three other cases in which, from a knowledge of the previous performance of vaccination, such applications were not employed, and where, in each case, extreme disfiguration resulted.

The above conclusions are merely confirmatory of those which have been

previously obtained by the study of many thousands of cases in all parts of the world. While pointing out the facts that the protective power of vaccination is not always complete, and that it is very liable to become exhausted after the lapse of some years, they point out still more clearly the inestimable value of the operation.

It is a matter, therefore, not only of regret, that its advantages are not more universally obtained, but of the highest importance in a sanitary point of view, when we reflect upon the power of diffusion which a single case of variola possesses when occurring in a densely-populated city. It cannot be doubted, however, when we find that, of 33 cases of variolous disease occurring in a short period in the practice of one physician, vaccination had never even been attempted in 15—that there is a wide-spread neglect of this operation throughout, at least, the lower classes of this community. A further proof of this is furnished by the lists of mortality from variola, during past years in Philadelphia, taken in connection with the fact that successful vaccination is an almost sure protection against death from variola.

In the following table, the entire annual mortality from variola in Philadelphia, together with the relative mortality during the early years of life, is shown for the 20 years ending with 1868 :—

	Under 1 year.	Between 1 and 2 yrs.	Between 2 and 5 yrs.	Total of all ages.
1848 . . .	21	13	17	100
1849 . . .	25	20	34	152
1850 . . .	13	8	5	40
1851 . . .	40	30	54	216
1852 . . .	89	54	100	427
1853 . . .	22	9	9	57
1854 . . .	12	4	6	49
1855 . . .	57	39	85	275
1856 . . .	86	44	88	390
1857 . . .	19	17	11	65
1858 . . .	1	2	1	7
1859 . . .	0	0	1	2
1860 . . .	14	10	16	57
1861 . . .	159	105	200	758
1862 . . .	52	44	66	264
1863 . . .	33	24	28	171
1864 . . .	57	31	61	260
1865 . . .	104	50	112	524
1866 . . .	32	17	27	144
1867 . . .	16	4	11	48
1868 . . .	0	0	0	1
First half of 1869 . . .	0	0	0	6

An inspection of this table undoubtedly establishes the fact that, whenever the contagious principle of variola, favoured by some peculiar epidemic

influence, is introduced into this community, it finds a large number of unprotected children who fall ready victims to its attack.

In most instances, it is easy to trace the neglect of vaccination either to the reckless thoughtlessness or the ignorant prejudices of the parents.

The first of these causes of neglect is inseparably connected with the mental state of many of the lower classes; but the prejudices against the operation have unfortunately been, to a certain extent, encouraged by the action of some of the medical profession itself. Thus, in some cases, I have found that the prejudice has arisen from the highly exaggerated accounts given by some physicians, of the dangers of the transmission of syphilis or some other affection by means of vaccination. But far more frequently it has appeared to me to result from the manifestly imperfect manner of performance, or from the inert character of the virus employed. For, among comparatively unreasoning persons, it is evident that a single case of severe, unmodified variola, occurring in a child who shortly before has been vaccinated and nominally protected against such attacks, will excite a wide-spread and powerful prejudice against the operation. From some such causes it has constantly been the case for years past, that many parents, among the poorer classes, do not have their children vaccinated.

There is, indeed, every reason to hope that during the past few years this mischievous neglect has been growing less and less frequent—a result principally due to the establishment, by ordinance (dated, I believe, 1860) of official vaccinators in every district of the city, who vaccinate all who apply to them, with reliable virus, and free of charge.

It is evident, however, from the annual mortality since 1861, the year in which this vaccination ordinance went into effect, that it does not fully accomplish the desired purpose. For too great reliance must not be placed upon the unprecedentedly low mortality of 1868, since a glance at the above table of annual mortalities will show that, in 1859, there were but 2 deaths, but yet that in 1861 there were 758, and in 1865, 524 deaths.

The attempt has been made to derive some general law from these figures to explain their variations, and certainly the series appears to partly bear out the hypothesis of Prof. Jackson, that the disease presents cycles of 5 years' duration. Thus during the past 20 years it will be observed, that there are four separate cycles, in each of which the number of deaths increases until the 3d year, and then declines during 2 years in 2 instances, and during 1 year in the others.

During the past 7 or 8 years, however (including the period of the late war), it is true that there have been many disturbing elements which must have interfered with the regular working of any such uniform law. Among these may be mentioned the transit of large bodies of troops through the city, the frequent return of soldiers on furlough from camps where the disease had occurred, and the return of cast-off army clothing, which, in some cases at least, was infected with variolous poison, and served as

fomites to propagate the disease. But it is difficult to discover any modification of these influences, apparently uniform throughout the period referred to, which can account for the great excess of variola in 1861 and 1865; and it is evident that great caution should be exercised in basing any opinion as to the probable amount of variolous disease during the next decade, upon the marked diminution during the past 3 years.

In order to offer a good chance of entirely banishing this loathsome and still fatal disease from the midst of this and other large communities, there is still needed, as was well expressed by Dr. W. Jewell,[1] "A compulsory system, under legal enactment, imposing a penalty for disobedience to its provisions, requiring every child born, or brought into the city, to be vaccinated; and making it an imperative obligation that satisfactory evidence of vaccination shall be given as a prerequisite for the admission of children into the public schools. This law, in order to operate effectually, should apply to the entire State." It is discouraging to observe, that in a community where the legislators have been wise enough to pass such a compulsory enactment—we refer to England—there are men so blind to the infinite advantages which it would secure, as to agitate for its repeal.

Mode of Communication.—During the early part of the winter of 1865, there had been, so far as I am aware, scarcely any variolous disease in the district in which the cases here recorded subsequently occurred. The origin of this little endemic was directly traceable to the influence of fomites, in the following manner: A large bale of cast-off clothing was sent to Philadelphia from one of the army posts to be worked over and made up into shoddy; and among the hands employed in the mill to which the bale was sent were two boys—Cases Nos. 10 and 30—to whom the task of picking the clothing to pieces was assigned. In addition to handling the infected clothing for hours, they both slept upon it, when exhausted by their work. I was called to visit these two lads within 36 hours of each other, and found them suffering with the initial symptoms of variola. Both subsequently presented well-marked cases, the one (No. 10) of discrete varioloid, the other (No. 30) of confluent variola; and many of the cases which I afterwards saw could be directly traced to the contagion of these two. It is not possible, however, to ascribe the epidemic of variola which prevailed in Philadelphia during that year to any one centre of contagion, owing to the influences which have been already mentioned; and it is owing to this wide diffusion of the contagious influence, that it was impossible, in so many cases, to determine the exact mode in which the disease was contracted, or the duration of the period of incubation.

In one other case (No. 28), the mode in which the disease was communicated deserves notice. The patient—a vigorous lad of 13 years—had

[1] Report on Meteorology and Epidemics: Transactions of College of Physicians of Philadelphia.—American Journal Medical Sciences, July, 1861, p. 79.

been for some weeks under my care, suffering from a severe attack of typhus fever, from which he convalesced favourably. There was little or no variola in his immediate neighbourhood, and he had of course not exposed himself in any way to its contagion.

Throughout the course of his attack of typhus, I visited him once or twice daily, and was at the same time in daily contact with numerous cases of variola. He entered on convalescence about January 15, and was allowed to walk out for a few minutes on January 28: on the following day he felt chilly, and the initial symptoms of a well-marked attack of variola immediately appeared. It is evident, either that his system did not become susceptible to the influence of the variolous contagion until convalescence was established, and that he contracted the disease during one of my visits subsequent to January 15, or, more probably, that the virus of the secondary disease was introduced to his system during the course of the primary affection, but remained dormant until convalescence was fully entered upon.

Period of Incubation.—In 27 out of these 33 cases, it was impossible to determine accurately the duration of this period: in 2, it is stated as 2 weeks, and in 3 others as exactly 12 days. In but one case—No. 10—did it seem to be less than this latter period; and here it is noted, that although it could not be accurately determined, the period of incubation appeared not to exceed 7 days.

It is not possible to assign any one definite period for the duration of this stage of variola; although in many cases, where it can be accurately determined, it appears to be 12 days precisely. That it may, however, occasionally exceed this period, is shown by the following case which came under my observation a few years ago: T. H., æt. 21, coloured, was admitted to the Pennsylvania Hospital February 22, 1866, suffering with frost-bite. He came directly from a small vessel, which had been on a voyage of some weeks, during which there had been no sickness on board. The surgical ward being full, he was placed in the medical ward. On February 27, J. L., æt. 20, was admitted to the same ward, suffering with the prodromes of some eruptive fever, and on March 1st, a papular variolous eruption appeared: the following morning he was sent to the smallpox hospital. T. H. was discharged on March 15th, cured of his frost-bite, but complaining of pain in the lumbar region; and applied for readmission March 19th, with a copious variolous eruption in the papular stage, which had appeared the preceding afternoon, 75 hours after the first complaint of pain in the back. J. L. was in the hospital 72 hours; during only 24 of which the variolous eruption was visible. There were consequently 16 days from the first exposure of T. H. to the pre-eruptive stage to the time he first complained of lumbar pain, or 14 days from the appearance of the eruption on J. L. to the first symptom in T. H.

Premonitory Symptoms.—In 20 out of 33 cases, no premonitory symp-

toms whatever were observed, while in 13 cases, 3 of varioloid and 10 of variola, there were some slight disturbances of health noticed. In 11 cases, there was merely languor, accompanied in 1 with nausea; and in 2 cases, marked nervous depression with chilliness and drowsiness. The cases in which these premonitory symptoms occurred were usually very severe ones.

Stage of Invasion.—The symptoms during this stage were rarely characteristic, especially in the cases of the younger children. In the patients over eight years old, however, the symptoms became more uniform and marked—consisting of a more or less pronounced chill, followed by fever of high grade, though the pulse did not usually become very rapid; severe pain in head, back, or side; slight nervous derangement; dysphagia, anorexia, vomiting, and usually constipation; congestion of the conjunctivæ in half the cases; but without any disturbances of respiration or of the urinary secretion.

There appeared to be little or no difference in the intensity of the symptoms during the early stage of cases of varioloid and variola.

Chill.—A more or less severe chill was noticed in 15 out of 33 cases; in 3 cases of varioloid and 12 of variola. The cases of varioloid occurred at the ages of 14, 14, and 15 years, and in each case the chill was marked; in one other case, at the age of 3 years, there were repeated attacks of shivering with marked nervous depression, but which did not present the features of ordinary chills. The cases of variola in which chill occurred, were at the ages of 2, 5, 6, 8, 8, 11, 12, 13, 15, 18, 18, 20 years; in 4 cases it amounted merely to chilliness; in 2 cases the chill was slight, and in 5 cases, including the one at 2 years, it was very marked.

Fever.—In all cases the initial chill was followed by fever, usually of a rather high grade. In the 10 cases of varioloid it is described as *high* in 4 cases, *marked* in 3, merely *present* in 1, and *mild* in 2; in 23 cases of variola, it is described as *high* in 5 cases, *marked* in 6, merely *present* in 11, and *slight* in 1 case. Unfortunately no thermometric observations were made, but the skin is frequently mentioned as being hot and dry. The *pulse* was invariably accelerated, though not extremely so; in 4 cases of varioloid where it is specially noted, it was 120, 115, 135, and 120 at the ages of 3, 4, 14, and 15 years respectively; in 9 cases of variola it was 140, 136, 144, 125, 144, 125, 96, 120, 120, 108, at the ages of 1, 1, $1\frac{3}{4}$, 5, 6, 8, 13, 15, and 20 years respectively.

Pain.—In all cases over 3 years of age pain was complained of, but in children under that age it was usually impossible to determine whether any pain was experienced, as in nearly all the 10 cases there was no manifestation of it. In one case of varioloid, however, at the age of 5 months, there was apparently slight pain, and in one case of variola, at the age of 6 months, there was apparently severe pain. Out of the 25 cases over the age of 3 years, the pain was *severe* in 17; merely *present* in 4; *moderate* in 2; *slight* in 1, and apparently *absent* in 1.

The pain was more frequently complained of in the head than in any other one part, though it was usually more general. Thus in 5 cases it was limited to the head, in 3 to the side, and in 1 to the back; in 3 cases it was complained of in the head and side, in 5 in the head and back, and in 5 in the head, back, sides, and limbs.

Nervous Symptoms.—On the other hand, marked symptoms of nervous disturbance were present in comparatively few cases, and were always associated with violent pain. These nervous symptoms consisted of *delirium* in 9 cases; 2 of varioloid, at age of 14 and 15 years, and 7 of variola, the youngest of which was 7 years old; marked *restlessness* in the first 6 cases of confluent variola, under 2 years of age, associated in one case with muscular twitching and in another, aged 2 years, with slight convulsions: *vertigo* in 1 case, marked *depression* in 1 case, and *hebetude* alone in 1 case.

The case above alluded to (No. 16) was the only one in which any convulsive attack was observed.

Digestive System.—There were, in all the cases, marked disturbances of digestion. The *tongue* was in every instance moist, and coated in the centre with a soft, light-coloured fur.

In 16 out of 33 cases there was more or less *dysphagia*, with redness of the fauces, and occasionally slight enlargement of the lymphatic glands at the angle of the lower jaw.

As, however, it was almost impossible to determine the existence of dysphagia in very young children, it renders the proportion of cases in which it was positively present, about 66 per cent. The condition of the *appetite* is mentioned in 22 cases, in 20 of which there was marked or complete anorexia, in 1 partial anorexia, and in 1 merely slight impairment of appetite. Even in cases where anorexia was complete, it occasionally did not persist throughout this stage, so that there was some slight return of appetite on the day preceding the appearance of the eruption.

Vomiting was present in 23, and absent in 10 cases. It was equally frequent at all ages; and is noted as being merely *present* or *frequent*, but in the great majority of cases it was repeated and was readily provoked by any article of food.

Bowels.—The state of the bowels is noted in all but 1 case. In 6 cases there was diarrhœa, in 13 the bowels were regular, and in 13 more or less costive. There was no unusual feature about the cases in which diarrhœa occurred to explain its presence.

Urine.—The character of the urine is noted in 23 cases, in 19 of which it was free, clear, and usually light coloured; in 3 cases it was free, but turbid from abundant deposit of urates; and in a single fatal case of confluent variola it was scanty and turbid.

Special Symptoms.—In 10 cases, all but one of which were over 10

years of age, there was marked congestion of the conjunctivæ. This congestion was uniform, and of a dull colour, not giving to the eye the staring, bright, ferretty appearance, so often observed in the early stage of typhus fever. Apart from this condition, there was a remarkable absence of special symptoms; the only ones observed being dry cough, more or less frequent in 4 cases; and slight epistaxis also in 4 cases.

Eruption.—The phenomena of the eruption were studied with great care. The date of its appearance is noted in 32 cases, in all instances dating from the first positive initial symptom:—

In 1 case it appeared at the end of 36 hours.
In 2 cases " " 48 "
In 7 " " " 60 "
In 1 case " " 72 "
In 19 cases it appeared on 3d day.
In 1 case it appeared on morning of 4th day.
In 1 " " at end of 96 hours.

Or, in more general terms, the eruption appeared during the 2d day in 3 cases; during the 3d day in 27 cases; and during the 4th day in 2 cases. There is no difference to be observed in the date of appearance of the eruption between the cases of variola and varioloid. In 9 cases of the latter it appeared on 3d day, and in but 1 at an earlier period, namely at the end of 48 hours. In the 3 cases, however, where the eruption appeared before the 3d day, its course was irregular and the various stages were not fully developed. The part upon which the eruption first appeared was noted in 30 cases: in 22 of these, it first appeared in the face; in 4 cases, on the arms first; in 2, first on the body; and in 2, apparently simultaneously on various parts of the body.

In the cases where it appeared first on the face, its subsequent development was not uniform: in 6 cases it next appeared on the body, and then on the extremities; and in 16 cases it appeared either on the arms or legs next, and finally on the trunk.

The amount of eruption has already been indicated. In all the cases of varioloid, and in 9 cases of variola, it was discrete, and in 14 cases of variola, confluent; but there were also some peculiarities about its distribution. Thus in all cases, even where it was confluent on some parts, there were very few pocks upon the abdomen. On the other hand, it was in nearly every instance most abundant upon the face, the thighs, and the arms. In some cases, the pocks were very numerous upon the lower part of the back.

In 1 case (No. 20) of variola, occurring in a child of 5 years old, there was but one single pock, which appeared on the arm and ran regularly through all the stages of the variolous eruption, and was attended with the constitutional symptoms of a fully developed attack of variola, including marked secondary fever. A few papules appeared about seven days later, but soon aborted and disappeared. The interest attaching to this case is very con-

siderable; for the single pock was so situated on the arm, that it might readily have been overlooked. And yet notwithstanding the very small amount of eruption, the course of the constitutional symptoms was sufficiently characteristic to clearly denote the true nature of the attack. There was, however, less abatement of the febrile symptoms upon the appearance of the eruption, than in any other of the cases of variola, excepting Nos. 11 and 12, where the rapidity of pulse and constitutional disturbance persisted until the fatal issue.

This fact then entirely confirms the view universally accepted, that the appearance of the cutaneous eruption is a sign of the establishment of an eliminative action on the part of the economy, and is consequently attended by marked relief of the symptoms of constitutional disturbance.

In all probability, the marked secondary fever which occurred coincidently with the maturation of the single pock on the skin, depended upon the evolution of a more abundant eruption on the gastro-intestinal mucous membrane. It is true that no pocks were visible in the fauces, but the frequent vomiting and marked diarrhœa which persisted during the first five or six days of the attack may probably be accepted as evidence of their presence at a lower point of the mucous tract.

The existence of a true variolous disease entirely unattended by eruption is extremely doubtful; but a case like the above renders it probable that the usual cutaneous eruption is not absolutely essential, but may be substituted entirely by an analogous affection of the mucous membranes. With regard to the frequency of this mucous eruption in non-fatal cases, the only evidence obtainable is to be drawn from the presence of marked gastro-intestinal disturbance, which can at most only be regarded as probable evidence, and from the presence of pocks on the mucous membrane of the mouth and throat. The conditions of these latter parts is noted in 28 cases, in ten of which there were no pocks seen on the mucous membranes, while in 18 there were pocks present on the lips, tongue, fauces, or pharynx. In 12 cases these pocks were very numerous, and in 7 cases the tongue was so much affected as so render mastication very painful.

The difference between the cases of varioloid and those of variola, began to be manifested in the characters of the eruption. In all the cases of varioloid the eruption was discrete and the pocks were not very numerous. But it was especially in its development that the eruption presented marked points of distinction in the respective forms of the disease.

In the cases of varioloid the papular stage was usually quite regular, and the eruption began to become vesicular on the third day; but beyond this stage, its course became irregular, and the vesicles either rapidly passed into imperfectly developed pustules, or else dried up while their contents were still serous. It may also be said, in general terms, that the pocks had not such markedly inflamed and indurated bases as the true variolous pocks, nor were they so tensely filled.

In all cases, whether the eruption was arrested in the vesicular stage or had passed into the pustular form, desiccation occurred with great rapidity, the resulting scabs were thin and frequently light coloured and desquamation began soon and progressed very quickly.

In 8 cases, where the date of the beginning of this sudden and rapid desiccation is noted, it occurred three times on the fifth day, while the eruption was vesicular; twice on the sixth day, the pocks being partly converted into pustules; once on the seventh day, when the pocks were in the same stage; and once on the eighth day, when the pocks were almost fully developed into pustules.

Desquamation began in from one to three days, from the occurrence of this sudden desiccation and was usually completed in from two to four days.

In nine of the cases of varioloid there is a note as to the existence of umbilication; it was absent in 3 cases; present in a few pocks in 4 cases; and present to a marked degree in 2 cases.

In one case, No. 8, the eruption presented the peculiar characters known as *crystalline pock;* the papules rapidly became converted into large prominent translucent bullous vesicles, the fluid of which was soon absorbed, leaving thin brown crusts. There was so much return of febrile action in this case towards the period of desiccation, as to render it uncertain whether it were a case of varioloid or of anomalous variola.

On the other hand, the eruption was regular throughout all its stages in no less than seventeen out of the twenty-three cases of variola. In one other case, the papules were short-lived, and umbilicated vesicles were to be seen on the third day of the eruption, but its subsequent stages were quite regular.

The stages of desiccation and desquamation also presented many irregularities. In 11 of the above 18 cases of non-fatal variola, the date of the beginning of desiccation is noted; in one case it was on the 8th day of the eruption; in 4, on the 9th day; and in 6, on the 10th day. The duration of desiccation also varied greatly: in 1 case it was but 2 days until desquamation began; in 4 cases, it was 3 days; in 2, 4 days; in 1, 7 days; in 1, 8 days; and in 1, 10 days. Accordingly, the beginning of desquamation, which is noted in twelve cases, occurred in 1 case on the 11th day of the eruption; in 1, on the 12th day; in 7, on the 13th day; in 2, on the 17th day; and in 1, on the 20th day. The duration of this last stage varied from 3 to 12 days; and in 11 cases, where its date of completion is noted, this occurred in 1, on the 15th day; in 1, on the 16th day; in 1, on the 19th day; in 3, on the 20th day; in 3, on the 25th day; in 1, on the 29th day; and in 1, not till after the 30th day.

Age had comparatively little influence upon the date of the completion of desquamation; the cases in which it was furthest postponed, to the 29th and 30th days, were in children aged 6 and 12 years respectively. In all those cases, however, where *desiccation* occurred slowly, *desquamation* was

also tardy. Among these 18 cases, in which the course of the eruption was regular, there was but 1 (No. 18, where death occurred on the 13th day from croup) which proved fatal.

In addition to these 18 cases, however, there were 5 others, in all of which the eruption was irregular. These latter all occurred in young children, their ages being respectively 6 months, 9 months, 1, 2, and 4 years; and in all but one case, the attack proved fatal.

In 3 of these cases, the eruption suddenly shrivelled at the 8th, 4th, and 14th days respectively, there was an effusion of blood into the pocks, and at the same time ecchymoses appeared over the surface of the body and especially in the flexures of the joints. In these cases, death rapidly occurred with all the symptoms of profound depression. In one other, aged 4 years, the pocks after developing into pustules, suddenly shrivelled on the 9th day of the eruption, and the child steadily sank and died, on the 14th day of the disease, from debility. In the last case, aged 2 years, the attack was a mild one; desiccation began on the 8th day, and desquamation on the 10th, and was completed by the 15th day.[1]

In all 23 cases the vesicles were umbilicated. In 19 cases very many pocks presented this condition to a marked degree; in 3 cases it is merely noted as being present, and in one case only a few pocks were umbilicated.

The peculiar odour, usually described as characteristic of severe variola, was present in but a few cases, and indeed it is only twice specially noted.

Symptoms during the Papular and Vesicular Stages.—The phenomena during this period of the disease were quite uniform in the cases of both varioloid and variola.

In nearly every case (26 out of 30 in which this point is noted) there was a marked and immediate subsidence of the fever and of all the constitutional symptoms upon the appearance of the eruption: in one case this did not occur until 24 hours afterwards. This subsidence was observed even in case No. 20, where there was but a single papule, though here it was only to a slight degree: and in one other case (No. 11), a fatal attack of confluent variola, there was also but slight abatement in the general symptoms. In but a single case (No. 12), also a fatal attack of confluent variola in an infant, was there no diminution in the intensity of the constitutional symptoms upon the appearance of the eruption.

The subsidence of the fever manifested itself by a rapid diminution of the heat of the skin, restlessness, pain and sleeplessness, and by cessation of the vomiting.

The symptom which showed least change, especially in the very young children, was the frequency of the pulse. Thus in Nos. 2 and 3, cases of discrete varioloid, at the ages of 3 and 4 years respectively, the pulse con-

[1] This case (No. 17) might, perhaps, have been as accurately placed among the cases of varioloid.

tinued at the rate of from 120 to 148 in the one, and of 115 in the other. So in 5 of the first 11 cases of variola in which the pulse-rate is noted, it was 165 to 180 in a fatal case of confluent variola at the age of 6 months; the same in a similar case at 9 months, and over 130 in 3 favorable cases at the ages of 21 months, 2 and 6 years respectively.

In cases occurring in older children, however, the pulse almost invariably became much less frequent, falling in the course of 24 hours to 108, 90, 84, or even 72.

The nervous disturbances usually subsided with the fever, and in 7 cases only were any such symptoms observed during this period of the disease. These consisted of great restlessness and muscular twitching in the first two cases of variola; of delirium for 24 or 36 hours in Nos. 26 and 31, both of whom had presented marked delirium during the stage of invasion; and of slight hebetude with drowsiness in three cases. In all the other cases, whatever nervous symptoms had been present immediately subsided. In but a single case, No. 25, where there had been very severe headache with delirium, is the persistence of pain during this stage noted.

It is noted that, with the exception of occasional dry cough in 4 cases, bronchial symptoms were entirely absent during the stage of invasion. During the period following, however, they became comparatively frequent and evidently depended upon the irritation of the mucous membrane due to the presence of the eruption in the fauces, and in some cases probably in the air passages themselves. In 18 cases they are noted as absent; among the other 14 cases there was slight dry cough in 9, and in 5 frequent cough, with dry or moist rales in the lungs, and occasionally with marked difficulty of respiration. In but one case, No. 11, did this pulmonary complication appear to be sufficiently grave to have any principal share in causing death.

The digestive derangements, which had been marked during the previous stage, disappeared in the great majority of cases. The tongue was, with three or four exceptions, moist and clean, or only lightly furred; vomiting was absent in all but 4 cases; and in 30 cases, where the condition of the bowels is noted, they were regular in 20, constipated in 7, and in but 3 was diarrhœa present. In these three latter cases there had been diarrhœa from the beginning of the attack. In most of the instances also there was at least some return of desire for food, and in 10 cases there was very fair appetite. It will be remembered that in 18 cases there were pocks present on the lips, tongue, or fauces, and in 16 of these cases marked dysphagia persisted throughout the stage now under consideration, and frequently prevented those patients who strongly desired food from taking it in any quantity. The great difference in intensity which existed between the inflammation of the skin in variola and varioloid was shown markedly by the fact that subcutaneous swelling was absent in all cases of the latter excepting one where there was a slight degree of it, while it was present in

all but 3 cases of variola, to a marked or even extreme degree in 12, to a moderate degree in 6, and slightly in 2 cases. The parts most affected by this œdema were the face, the neck, and in a few cases the extremities. The features were in some instances so swollen as to render the patient utterly unrecognizable, and in other cases the œdema of the neck was so extreme as to aid materially in rendering deglutition difficult.

The state of the urine is noted in 19 cases, in 15 of which it was of good quantity, and clear without any marked deposit; in 1 case it was profuse on the 2d day of the eruption; in 1 case it was clear but rather scanty; in 1 case it was free but turbid from a large deposit of urates, and in 1 case (No. 6) of discrete varioloid, the urine, on the 5th day of the eruption, contained albumen, blood, and granular tube casts; on the 6th day it was almost suppressed and the pulse had fallen to 65; on the 8th day it still contained a little blood, but by the 10th day was entirely healthy. In the only case in which the amount of chlorides was tested, they were markedly deficient.

One of the most distinctive features between varioloid and variola is the secondary fever or fever of maturation, and accordingly the presence and peculiarities of this were noted carefully in every case.

In 8 of the 10 cases classed as varioloid there was no perceptible return of febrile action after its subsidence upon the appearance of the eruption. In one case, No. 2, there was a very slight return of fever on the 5th day; and in one other, No. 8, in which the eruption presented the peculiar characters of crystalline pock, there was a very marked return of febrile action coincident with the desiccation of the large bullous vesicles.

In the 23 cases of variola, on the other hand, the occurrence of secondary fever is noted in all, excepting 3 fatal cases, Nos. 12, 13, and 18. In 15 cases it was very marked; in 2 cases, moderate; and in 3 cases, the increase of febrile action was slight.

In the first 2 of the fatal cases in which the secondary fever was absent, the eruption did not develop at all, but became hemorrhagic, and death occurred on the 7th and 9th days of the disease respectively. In the 3d case the eruption developed regularly until the 12th day, and no reason can be assigned for the non-occurrence of maturative fever, excepting the profound prostration of the vital forces.

The date of the beginning of the secondary fever is noted in 14 cases, in one of which it appeared on the 5th day of the eruption, in 6 cases on the 6th day, in 6 cases on the 7th day, and in 1 case on the 8th day. Its duration bore a definite relation to the date of its appearance, being longer when it began early, and shorter when it was not developed until a later period. The extremes of its duration were two and four and a half days, but in the great majority of cases it lasted about three days, and then more or less quickly subsided.

During its continuance, there were marked and often violent febrile

symptoms; consisting of extreme restlessness with muscular twitching, general soreness of the body, and, in some few cases, delirium; the heat of skin was very high, and the pulse irritative in character, weak, and even more frequent than during the initiatory fever, reaching 130 in some of the older patients, and being noted as too rapid to count in several of the young children. The appetite again declined in most cases, the bowels had a tendency to become constipated, and the urine was usually noted to become scanty and much darker in colour. During the decline of this secondary fever, all the symptoms of constitutional disturbance rapidly subsided, the eruption desiccated more or less quickly, and the patient soon entered upon convalescence.

A certain amount of constitutional irritation was maintained, however, by the presence of the crusts, which were a constant source of annoyance, exciting intolerable itching, so that the patients could not, in many instances, be restrained from tearing the scabs off with their nails, leaving small, raw, bleeding ulcers.

The only symptom, however, during the decline of the disease, which merits special attention, was the condition of the *urine*, which, in a number of cases, underwent a sudden and, apparently, critical increase in quantity after the beginning of desiccation.

This increase in the amount of urine was observed in but a single case of varioloid, No. 9, where the eruption was limited to a half-dozen papules, which became vesicular, and dried up on the fifth day after appearing. On the second day of the eruption, there was a profuse discharge of clear watery urine, followed by a rapid subsidence of all the constitutional symptoms.

The apparent relation between the cutaneous eruption and the secretion of urine is, however, shown more forcibly in some of the cases of variola.

In no less than 8 out of the 18 cases which recovered, it is noted that during desiccation, there was a very rapid and marked increase in the amount of urine. The quantity is usually spoken of as profuse, but in 3 cases it was accurately measured: in case No. 28, a boy, aged 13 years, the amount, on the 12th day of the eruption, was f℥xlv; and in case No. 22, a girl, aged 18 years, the daily amount of urine passed from the 10th to the 13th day of the eruption was f℥clx, or 10 pints, of sp. gr. 1001, as clear as spring water, containing no albumen, but with a fair proportion of chlorides. In case No. 33, a young man aged 20 years, the urine became very copious after the 11th day of the eruption, and on the 18th day he passed f℥clx of crystal clear urine, of sp. gr. 1007, without albumen, but containing abundant chlorides. Coincident with this remarkable increase in quantity of urine, there was not only rapid desiccation of the eruption, but a correspondingly rapid diminution in the amount of the subcutaneous œdema.

As tending to further illustrate the obvious connection between the rapid process of desiccation and this abundant secretion of watery urine, case No. 27 may be quoted. This patient, aged 12 years, had presented very marked secondary fever, with great subcutaneous swelling, and dark scanty urine. On the subsidence of the secondary fever, the urine became slightly more free, but on the 12th day of the eruption, she had a chill, the urine contained a little albumen, was milky, from a deposit of white crystals of uric acid, and presented a deficiency in the amount of chlorides. Desiccation was remarkably slow, and was not completed for seven days; the pocks formed thick tallow-like crusts, which had not completely desquamated by the 27th day. It is highly probable that, in this case, owing to a sudden attack of renal congestion on the 12th day, the kidneys were incapacitated from secreting freely; there was no rapid removal of fluid from the economy, and, in consequence, the fluid was not rapidly absorbed from the pustules, so that desiccation was rendered tedious and imperfect.

To those who have no objection to the classical term "critical discharge," the above instances of profuse secretion of watery urine will certainly appear to fairly merit that name.

Diagnosis.—The chief interest in connection with this point lies in the differential diagnosis of the disease during the stage of invasion. In all cases where the eruption appeared and developed regularly, any probability of error was quickly removed.

During the stage of invasion, however, as has been already seen, there were few characteristic symptoms in the cases occurring in infancy; and, indeed, it was principally the knowledge of the exposure to variolous contagion that enabled the character of the coming disease to be foretold. In older patients, however, the history of the case was greatly aided by the frequent occurrence of congestion of the eyes, dysphagia, vomiting, unusually severe pain, with but little cerebral disturbance, and without excessive acceleration of the pulse.

Apart, however, from these positive symptoms, which in many cases were so markedly present as to justify a direct symptomatic diagnosis, there was such an absence of the characteristic symptoms of the other exanthemata, as would frequently lead to a correct diagnosis by exclusion.

From the invasion of scarlatina, the discrimination was aided by the more moderate heat of skin and acceleration of the pulse; by the comparatively slight swelling of the cervical glands; by the presence of congestion of the eyes, and by the greater intensity of the pain; but, in several cases where the fever was very high, and the throat symptoms marked, it was only the greater duration of this stage, and the ultimate appearance of a papular eruption that established the diagnosis.

From the stage of invasion of rubeola, the diagnosis was, in most cases, readily made by the difference in the appearance of the eyes, which were less *suffused* and not *watery*, as in rubeola; by the absence of sneez-

ing or coryza; by the rarity of the cough, which, when present, was rather dry and hacking than hoarse and scraping; by the greater intensity of the pain, and especially of that in the loins; by the presence of dysphagia; and finally, by the character of the papules, which were small and shot-like, instead of presenting the softer, flatter, and broader characters of the rubeolous eruption.

In several cases where there was epistaxis, but especially in No. 24, where there was repeated epistaxis, associated with diarrhœa and cough, there was some hesitation in deciding against the possibility of the disease being typhoid fever. This doubt was, however, removed, by attention to the mode of the attack, which was far more sudden than is usual in typhoid fever; to the violence and seat of the pain; to the faucial character of the cough and the dysphagia; even before the appearance of the eruption on the 3d day, conclusively settled the question.

The question of *prognosis* must be considered under two aspects: as controlled by general influences, or by the special symptoms of each individual case. From the first point of view it is evident that the prognosis must be unfavourable in direct proportion to the youth of the patient, all the deaths which occurred being in children of four years of age or under; and again, that the mere fact of the previous successful vaccination of the patient is sufficient to render the prognosis almost absolutely favourable as regards life; though the severity of the attack, its duration, and the probability of disfiguration will be in inverse proportion to the degree of the protective influence still exerted by the vaccination.

Among the special symptoms which must be regarded as unfavourable, rank first certain peculiarities in the eruption, as its confluence, its tardy appearance, imperfect and irregular development, hemorrhagic condition of the contents of the pocks, associated with petechiæ or ecchymoses, or its recession or shrivelling at any stage of its development.

The continuance of the fever, or its very slight subsidence only, after the appearance of the eruption, with persistent rapidity of pulse (Nos. 11 and 12), are also very unfavourable conditions.

The excess of any one set of symptoms, as the bronchial (No. 11), the cerebral, or the faucial, or digestive (No. 21), is of course highly unfavourable as complicating the regular course of the disease.

On the other hand, it may be said that the prognosis is highly favourable in all cases of variolous disease, whether modified by previous vaccination or not, which occur after the age of four or five years, and which present no marked irregularity in their symptoms, and no serious complications.

Complications.—Among the list of complications which frequently occur during variola, there are but few noticed in the cases which form the basis of this article.

Ophthalmia of a quite severe form, but yielding to mild treatment, was observed in 3 out of the 28 non-fatal cases.

Albuminuria of a temporary character, accompanied by the presence of blood and tube casts in the urine, and due to renal congestion, was present in one case (No. 6) from the 5th to the 9th day of the eruption. This condition of urine was associated with recession of the eruption and marked slowness of the pulse (66 in the minute, in a boy of 11 years old), but disappeared apparently under the influence of active counter-irritation over the kidneys, and the use of saline purgatives.

Metrorrhagia was noticed during the first twelve days of a very severe attack of confluent variola in a girl (No. 31) æt. 18, who was menstruating at the time of the attack. There was no other evidence whatever of a hemorrhagic tendency in the disease.

In No. 26, on the tenth and eleventh days of the eruption, the patient had a well-marked chill, followed by high fever, slight delirium, and subsiding with sweating. Occurring during the process of desiccation, these chills suggested the possibility of pyæmia having ensued, but fortunately their recurrence was entirely prevented by antiperiodic doses of sulphate of cinchonia, and no reasonable doubt remains that the case was merely complicated with the malarial poison, which manifested itself in the form of quotidian intermittent so soon as the evolution of the variolous virus was completed.

Among the five fatal cases, one (No. 11) was complicated with congestion of the lungs; and in one other (No. 18) symptoms of croup supervened on the thirteenth day and rapidly proved fatal. There was no expectoration of false membranes, nor was it possible to obtain a very clear view of the fauces to determine the presence of pseudo-membranous deposit there, and as no autopsy was permitted, it is impossible to decide whether the symptoms were really due to true croup or merely to œdematous laryngitis.

In two cases (Nos. 11 and 21) there was such marked opposition to taking any food as to constitute a very serious complication. In the former case there was no doubt that it materially aided in causing the fatal result; while the latter patient, whose case will be detailed under the head of treatment, was sustained for several days solely by whiskey, which she fortunately was willing to drink freely.

Results.—The results of these cases have been so frequently alluded to in discussing the effect of age and vaccination upon the mortality, that it is sufficient to state here that all the cases of varioloid recovered; that of 23 cases of variola, 5 died, being a mortality of 21.7 per cent.; or taking the entire series of 33 cases, a mortality of a trifle over 15 per cent. Of 10 cases of variola, 9 confluent and 1 discrete, occurring within the first five years of life, 5 or 50 per cent. were fatal; and of 4 cases, all confluent, occurring within the first year of life, 3 or 75 per cent. were fatal; while of 13 cases occurring between the ages of 5 to 20 years, not one was fatal.

Duration.—The duration of the attacks was in all cases measured from the initial symptom to the establishment of undoubted convalescence.

In the 10 cases of varioloid the mean duration was 9.8 days; the extremes being respectively 6 and 16 days.

In the 18 favorable cases of variola the mean duration was 19.3 days, or almost exactly twice that of the cases of varioloid, while the extremes were respectively 15 and 24 days.

In the 5 fatal cases of variola the duration was respectively, 16, 7, 9, 16, and 14 days—the mean being 12.4 days.

The causes of death have been already adverted to. In the two cases which proved fatal at the end of 7 and 9 days, the principal cause of death was the malignancy of the attack as evidenced by profound prostration of the vital forces, and by the hemorrhagic character of the eruption. In addition to this there was almost entire inability to swallow. In case No. 11, a little girl aged 6 months, the cause of death on the 16th day was chiefly congestion of the lungs, aided powerfully by marked indisposition, and, indeed, inability to take nourishment.

In case No. 18, the attack, although very severe, and although the patient was entirely neglected, was apparently progressing quite favourably until the 13th day when symptoms of laryngeal obstruction supervened and death occurred, either from pseudo-membranous croup or œdematous laryngitis, in about 72 hours.

In the remaining fatal case, No. 19, the attack was characterized from the beginning by marked debility; the eruption did not all develop, but on the 9th day of the eruption the sero-pustules on the extremities shrivelled, while those on the face maturated and desiccated regularly. Subsequently, despite free stimulation, the child steadily sank and died on the 14th day of the disease.

Sequelæ.—In all save the fatal cases, convalescence was rapid and the recovery complete, and unattended by any sequelæ, excepting, in a very few instances, more or less disfiguration.

Disfiguration.—No permanent disfiguration was caused in any of the cases of varioloid, the cutaneous inflammation being comparatively superficial, and the crusts, on separating, leaving merely small erythematous spots where the epiderm was soft and delicate.

Among the 18 favourable cases of variola, there were five in which disfiguration resulted, in three of which it was very marked, in one slight, and in one so trifling that it could scarcely be detected, and would in all probability be only temporary.

In all of these cases where disfiguration resulted, the eruption was confluent, but a further consideration will show that the amount of the eruption was not the only important influence in determining its frequency and degree.

Thus, it will be observed that in 10 cases no local application was made

to the face to prevent pitting, while in the other 8 cases, some such application was employed. Among the 10 cases in which no preventive application was made, there were 5 of discrete variola, in none of which did any disfiguration ensue; and 5 of confluent variola, in 3 of which marked pitting followed. It is interesting to note that 3 of these 5 cases of confluent variola occurred within the first two years of life, and that but one of them (No. 11) was disfigured, while both the other cases, one 6, and the other 18 years of age, were severely pitted. It would appear from this, as would indeed seem probable from other considerations, that the danger of pitting from the variolous eruption is much less in early infancy when the reparative activity of the skin is so remarkable. In No. 11, however, where death occurred on the 16th day from congestion of the lungs and debility, it was noticed that wherever the crusts had been rubbed off, deep pits were left.

One of the other two cases where pitting occurred, No. 32, was not seen until too late to make any local application with hope of benefit, but the only excuse for neglecting such preventive treatment in the other case, No. 21, is that the child was so horribly ill that it appeared almost impossible for recovery to take place, and very undesirable to do anything that could disturb or annoy her in the least degree. It is, however, I think, much to be regretted that the solution of gutta percha was not freely applied over the face.

Attention has been already called to the fact, that in No. 32, where marked pitting ensued, the patient, a young and good-looking woman, had been successfully vaccinated when a young child.

Turning now to the group in which local applications were made, there are 8 cases; 4 of confluent, and the same number of discrete variola, all of the patients being 8 years or more of age.

In but two cases did any pitting occur, in one of them, No. 30, to a slight degree, and in the other, No. 33, a most violent case of confluent variola, to so trifling a degree that the scars could scarcely be detected, and would, in all probability, disappear entirely in a short time. It appears, therefore, that the local applications employed certainly had the effect of very greatly diminishing the degree of disfiguration, if not of entirely preventing it in a majority of cases.

The local applications used were, in 2 cases of discrete and 1 of confluent variola, mercurial plaster spread on a muslin cloth and applied as a mask to the face, holes being cut for the eyes, the nostrils, and mouth; and, in 2 cases of discrete and 3 of confluent variola, a saturated solution of gutta-percha in chloroform painted over the face until a quite thick layer was formed.

In estimating the comparative value of these two applications, the data are very meagre; yet it will be observed, that in the only case of confluent variola in which mercurial plaster was used, there was some slight disfiguration, while out of 3 severe confluent cases in which the gutta-percha

was applied, there was not the slightest pitting in 2 cases, and but a very slight degree of it in the third.

The precise action of this latter application is carefully noted in 5 cases. In one, No. 26, it was applied thoroughly to the face before the appearance of the eruption, and it is noted that although the eruption was confluent on that part, it never fully maturated, but desiccated some days before the pocks on any other portion of the body.

In the other cases, Nos. 27, 28, 29, and 33, the application was made during the vesicular stage; in Nos. 28 and 29, on the sixth day of the eruption.

In one of them, No. 29, when the eruption on the body was highly pustular, the pocks on the face were small and whiter, and desiccated much more rapidly than the pocks elsewhere. In the other cases, the application did not prevent the maturation of the pocks, nor lessen the duration of desiccation and desquamation, but still, judging from the immunity from pitting, it would appear to have modified the severity of the cutaneous inflammation in each instance. It is of course obvious, that the full beneficial effects of such local remedies can only be expected in cases where the application has been made at a very early period of the eruption.

Treatment.—The treatment was purposely very uniform so far as concerns the remedies employed. These consisted of a febrifuge diuretic mixture, sulphate of cinchonia and whiskey, in almost all the cases; with a few other drugs, which were used only in exceptional cases.

The febrifuge mixture was as follows: Potass. acet. gr. xl, sp. ætheris nitrosi f℥j, liq. ammoniæ acetatis f℥iij, ft. sol., with the addition, in cases of young children, of a little ginger syrup; of this solution, from a teaspoonful to a tablespoonful was given, according to the age of the child and the degree of fever, from four to eight times daily. It appeared to relieve the intense thirst and sense of heat, and may have been concerned in promoting the profuse secretion of watery urine which in so many cases attended the subsidence of the secondary fever. In most of the cases of varioloid, the use of this mixture, with the regulation of the diet, constituted the entire treatment. In 4 cases, some preparation of cinchona was used; in very small doses in Nos. 2 and 11; while in Nos. 4 and 10, aged 8 and 15 years respectively, where the constitutional symptoms were more severe, sulphate of cinchonia was given in doses of gr. iv and gr. xij daily.

In all the cases of variola under 2 years of age, excepting No. 8, which was not seen until the day before death, tr. cinchon. comp. was given in doses of ♏xv every three or four hours; while in the cases above that age, with two exceptions, where tr. cinchon. comp. was used, sulphate of cinchonia was given, in the form of solution, in doses of from gr. iv to gr. xij, according to the age.

In all of these cases, this drug was administered purely as a general muscular and cardiac tonic, the most alarming symptom in many instances

being the marked tendency to debility and failure of the powers of the circulation.

In No. 26, however, which was complicated with quotidian intermittent fever appearing on the 11th day, the amount of cinchonia taken, which had been gr. viij daily, was immediately increased to gr. xx, with the desired effect of checking the malarial paroxysms.

Stimulus.—In only two cases of varioloid was any whiskey given: No. 2, where f℥ij daily were given; and No. 10, where the amount taken was f℥xij daily.

In No. 2 the stimulus was indicated by the very rapid and feeble pulse persisting after the appearance of the eruption: the amount given was well tolerated, and the child made a very rapid convalescence.

In No. 10 there had been unusually severe nervous symptoms, with complete anorexia and great debility, and the pulse remained frequent, 120, after the appearance of the eruption. Under these circumstances, the amount of stimulus was rapidly increased until the patient, a lad of 15 years, took f℥xij whiskey daily. It was observed, however, that the rapidity of the pulse persisted until the 16th day, and that the date of convalescence was unusually late, so that I think it may be fairly questioned whether the amount of stimulus was not excessive and did not tend to prolong the attack.

All of the cases of variola, under 5 years of age, took f℥ij whiskey daily. One of these cases, however, No. 18, was only under treatment for a few hours, and was moribund when first seen. Of the other 9 cases, 7 were confluent and 2 discrete; 5 recovered and 4 died. In every instance the stimulus was willingly taken, retained, and appeared to produce favourable effects. The chief object in its administration was to stimulate the circulation and maintain the cutaneous eruption. Its influence in this direction was well shown in No. 15, where, on the 8th day, the eruption on the face receded, leaving wrinkled and partly dry crusts; but under the influence of active stimulation (f℥ij whiskey daily) the vesicles refilled and maturated regularly.

In the cases over 5 years of age the amounts given were as follows:—

Case 21, female, æt. 6, f℥ij ad viij daily.
" 22, " " 7, not noted.
" 23, " " 8, not noted.
" 24, male, " 8, f℥viij daily.
" 25, female, " 8, f℥j daily.
" 26, male, " 11, f℥iv ad vj daily.
" 27, female, " 12, f℥iv ad vj daily.
Case 28, male, æt. 13, f℥iv daily.
" 29, " " 13,
" 30, " " 15, f℥xij daily.
" 31, female, " 18, f℥xviij daily.
" 32, " " 18, f℥xij daily.
" 33, male, " 20, f℥iv ad vj daily.

It will be readily seen from the above table that, although whiskey was used in every case, it was not given without careful reference to the state of the patient. The symptoms which were recognized as indications for its administration and as regulating the amount to be given were, the

abundance of the eruption; any tendency to its recession, any irregularity in its development, or a hemorrhagic appearance of the pocks; disturbances of the nervous system as shown by great restlessness, with or without muscular twitching or delirium; rapidity of the pulse, especially when associated with smallness and feebleness.

There were also two other conditions which appeared to call for largely increased amount of stimulus.

The first of these was the almost entire inability and unwillingness of some of the little patients to take nourishment, under which circumstances it happened more than once, that they would greedily drink wine or whiskey freely diluted with sweetened water.

The subjoined case is quoted to show the beneficial effects of free stimulation in such a condition.

CASE 21.—Mary O., æt. 6, previously healthy, was directly exposed to the contagion of cases of malignant variola, and after 12 days' incubation, was, on the afternoon of December 28, 1864, seized with violent pain in head and back, without dysphagia, but with marked nausea and vomiting.

December 30. No eruption had appeared. Violent inflammation of right eye, with chemosis, and great redness and œdema of tissues about orbit. The cervical glands were slightly enlarged; the tongue moist, coated white, with no enlargement of its papillæ. Pulse 144 and feeble; respirations rapid. The intelligence was perfect. Bowels very costive; urine free and clear.

Ordered sulph. cinchoniæ gr. jss, q. q. h.; beef-tea, whiskey f℥ij daily in milk, and frictions with capsicum to the surface.

31*st*. Has passed a bad night, suffering with restlessness, nausea and vomiting; bowels not opened; right eye more inflamed. No cough or dysphagia. Heat of skin less; pulse 145, very small. During the night numerous small papules have appeared at various points of the surface.

Ordered enema containing f℥ss ol. ricini. Frictions to be continued; lime-water to be added to milk punch; and mustard plaster to be applied over stomach to relieve nausea, and tr. opii camph. f℥ss to allay pain and procure sleep.

January 1. Has passed a good night, and eruption coming out well, especially on the left cheek. Skin moderately hot; pulse 130. Tongue dryish and nausea less, but with anorexia. Bowels opened slightly by the enema.

2*d*. Has passed a fair night, but obstinately refuses to take any nourishment, and at 1 A.M., had a syncopal attack, with falling of the temperature and very imperfect reaction. Eruption well out, beginning to assume an umbilicated vesicular appearance. Right eye no worse. Slight dysphagia; tongue dryish.

3*d*. Eruption developing well, many of the pocks being vesicular and umbilicated; it is confluent on the face, and there are numbers of pocks

on the tongue. Pulse 130; respirations easy; bowels spontaneously and freely opened. Urine free, with large deposit of urates. After being forced once or twice, she now takes milk punch, mutton broth, and sulph. cinchonia gr. v daily.

4th. Fifth day of eruption. Eruption confluent on face and parts of arms; but few pocks on the trunk; contents of vesicles whitish and opaque. Eyes entirely closed; enormous swelling of neck. A great number of pocks have developed in mouth, causing extreme dysphagia. Tongue very dry, and she again obstinately refuses to take any nourishment; the only thing which she will swallow is lemonade, which disguised the taste of the cinchonia. Has passed a very bad night. Bowels costive; urine free. Respiration sighing; pulse 145, and very feeble. Ordered nutritious enemata of beef-tea f℥j with whiskey f℥ij.

5th. Eruption maturating; secondary fever still marked; pulse 140; respirations, 25. Two enemata were given, but were not long retained; but she is now willing to drink whiskey mixed with lemonade, and takes f℥viij of it in course of the day.

6th. Refuses mixture of cinchonia and lemonade, but still drinks whiskey, f℥viij, in lemonade, during 24 hours. She is also willing to drink a little weak beef and barley soup. Has passed a fair night. Pulse still 144, but with rather more strength. Tongue moist, and covered with pustules. Swelling of neck less. Bowels quiet. Urine free and clear. The eruption is progressing well; on the face and extremities it is confluent, of a yellowish-white colour on face, still pearl-coloured on the extremities; on the trunk the eruption is discrete.

7th. Decidedly better. Desiccation has begun on face. Pustules fully developed on body, but on extremities their contents are still sero-purulent. Secondary fever declining. Has passed a fair night. Pulse 130, with increased strength. Cervical œdema diminishing. Tongue dryish, smooth, the pustules on it have desiccated. Bowels quiet. Urine free and clear. She is willing to take a little more soup. Still takes whiskey f℥iij daily. Ordered syr. rhei aromat. f℥iij.

8th. 9th day of eruption. Desiccation advancing on face and neck. Pulse 120.

11th. 12th day of eruption. Desquamating on face. Pulse 108. Appetite good and eats freely. Functions all regular.

12th. Improving rapidly. Reduced whiskey to f℥iv daily.

13th. Pulse 120. Slight increase of heat of skin.

17th. 18th day of eruption. Pulse 108. She is entirely convalescent, though desquamation is not completed.

25th. 26th day of eruption. Desquamation complete, but there is considerable disfiguration from pitting.

Although this child took a little weak meat soup on January 6th and 7th, the quantity was quite insignificant, and it is not too much to say

that she was sustained during three days almost exclusively by half a pint of strong whiskey daily. In the course of eight days, this patient, but six years of age, took 64 ounces of this liquor, and there can be no doubt that it was the principal cause of the favourable termination of the case. Although far from being an advocate for indiscriminate and excessive stimulation in disease, I am still convinced that we are yet far from appreciating the full extent of the beneficial influence of alcoholic stimuli in the acute diseases of childhood, an influence of which no better example than the above quoted case could be demanded.

The other condition under which large amounts of stimulus were given with marked advantage, was in cases where the secondary fever was severe and attended with great nervous disturbance. Thus, in Cases 31 and 32, both young women aged 18 years, and in both of which there was at this stage delirium, great restlessness and insomnia, high temperature and rapid pulse, the daily amount of whiskey taken was f℥xviij and f℥xij respectively; and in each case, with the most markedly beneficial effect.

The only form of stimulus used was whiskey (excepting a little sherry wine in a few cases for a day or two) and in every case it was administered in the form of milk punch, 2 parts of milk, to 1 of whiskey, with the addition of a half part of lime-water, when nausea or vomiting was present. This punch was given in small quantities, from f℥ss to f℥ij, according to the age and the amount of stimulus used, every two, three, or four hours.

The only special symptoms or complications which required treatment, were ophthalmia, insomnia, pain and restlessness, nausea and vomiting, and the constipation which was so frequent. In no cases, fortunately, did any pocks form on the ocular conjunctiva, and the only treatment adopted for the conjunctivitis was careful syringing with lukewarm water, and the instillation under the eyelids of a weak collyrium of acetate of lead and vin. opii. Opium was given freely, in full doses, at any stage of the disease, when the nervous restlessness or the pain were so marked as to prevent refreshing sleep. It was, however, especially during the stage of secondary fever that it was indicated, and when its administration was followed by the most delightful effects. In cases occurring since those tabulated above, bromide of potassium has been given in large doses during the maturative fever, and in most instances will be found to act admirably in quieting agitation and securing refreshing sleep.

The nausea and vomiting were treated by the external applications of sinapisms over the stomach, and by the administration of small fragments of ice, and of small quantities of lime-water and milk.

In the cases where the bowels were constipated, repeated doses of the tincture, or the aromatic syrup of rhubarb, aided in their action by enemata, at times containing ol. ricini, were given so as to secure at least one full evacuation every 48 hours. In only a very few instances was there such

a degree of diarrhœa as to need checking; but when present, it yielded readily to the use of small doses of chalk and opium.

The treatment adopted in the only case where renal symptoms appeared (consisting of scanty, high-coloured urine, containing albumen, blood, and tube casts) has been already mentioned. The sulphate of cinchonia, and tr. ferri chloridi, which the patient was already taking, were continued, and in addition counter-irritation over the kidneys, and active purgation by saline cathartics were employed. Under this treatment the symptoms rapidly disappeared, and the urine resumed its normal character in three or four days.

The diet was invariably of a highly nutritious, though readily digestible character, and consisted chiefly of milk, with or without the addition of some farinaceous preparation, as arrowroot or farina; beef-tea, or the cold extract of beef prepared according to Liebig's formula; other meat broths with the addition of a little rice or barley; eggs beaten up with wine and milk; milk punch prepared in the manner already mentioned.

In the cases occurring during the first two years of life, the diet was restricted to milk, beef-tea, and weak milk punch.

After the subsidence of the secondary fever, iron, usually in the form of tr. ferri chloridi, combined with sp. ætheris nitrosi, was prescribed, and its use continued, in conjunction with small doses of sulphate of cinchonia and nutritious diet, throughout convalescence.

The above sketch of treatment is drawn rather from the non-fatal cases, but is applicable also to the fatal ones, excepting that as the vital powers failed in these latter, the amount of bark and whiskey was largely increased, and external stimulation was resorted to, in the form of hot blankets, or frictions with capsicum. In one case, No. 13, where the eruption became hemorrhagic, ol. terebinth. was given in emulsion in doses of gtt. ij q. q. h., for 36 hours preceding death.

All possible precautions were observed in the general management of the cases. Isolation was insisted upon wherever practicable, or if impossible, all those exposed to the contagion were immediately vaccinated, even though that operation had been performed but a single year before. The sick chamber was freely ventilated, and the air disinfected by the liberation of chlorine from chlorinated soda. It cannot be doubted that by the adoption of these precautions, the spread of the disease was prevented in a very great number of instances, for nearly all of the cases occurred in such circumstances that large numbers of children and adults were within the range of contagion.

It is to be regretted that no opportunity was afforded for determining the morbid appearances in the five fatal cases, but the prejudices of the relatives in every case prevented the performance of an autopsy.

ART. II.—*A Contribution to Reparative Surgery; Case of Destruction of the Right Half of both Upper and Lower Lips, and Angle of the Mouth, with Closure of Jaws by Cicatricial Bands; Reconstruction of Mouth by a Succession of Plastic Operations, and Subsequent Relief of the Lower Jaw by Esmarck's Operation.* By GURDON BUCK, M. D., Surgeon to New York Hospital and St. Luke's Hospital. (With three wood-cuts.)

G. K., six years and four months old, of German parentage, resident of Williamsburg, Long Island, of fair complexion, and light hair, was admitted into St. Luke's Hospital in May, 1866.

The destruction of parts in this case appears, from the father's statement, to have been caused by cancrum oris occurring in the progress of typhoid fever, whether following the administration of mercury cannot be satisfactorily determined.

Present Condition.—One-half of the upper and two-fifths of the lower lip, with the angle of the mouth, on the right side, are gone, leaving the subjacent teeth and gum surface exposed. The adjacent cicatrized margin of the cheek is retracted and closely adherent to the upper and lower jaws, binding them together and preventing their separation from each other.

Fig. 1.

The lining mucous membrane of the right cheek being destroyed, the free space between the teeth and cheek is obliterated. The remaining portions of the lips, on the left side, are shrunken in their vertical dimensions, leav-

ing the teeth uncovered. The vermilion border of the upper lip terminates below the septum nasi, while that of the lower lip terminates below the right inferior canine tooth; both lips are somewhat everted at their termination. The columna nasi has been destroyed, leaving the inferior cicatrized margin of the septum exposed. Figure 1 shows the condition just described.

At the time of his admission a necrosed portion of the lower jaw, on the right side, was removed, and found to consist of the entire breadth of the jaw vertically, including three-fourths of an inch in length of its lower border, and containing in its upper border the entire alveolar socket of the second bicuspid tooth, with one-half the socket of the first bicuspid anteriorly and one-half the socket of first molar posteriorly.

Notwithstanding the loss of so considerable a portion of the jaw, the reproduction of the bone was so complete that subsequently no trace of deficiency could be detected by the finger passed along the lower margin of the jaw. Articulation is considerably affected, and the use of solid food rendered inadmissible by the closure of the teeth. His general health was pretty good, and steadily improved after admission into the hospital by the aid of generous diet and free out-door exposure.

FIRST OPERATION.—*June* 20. After the administration of ether the right cheek was first detached, above and below, from the maxillæ, by applying the knife flatwise in contact with the surface of the bone, and continuing the dissection until all the resisting parts were liberated and the jaws could be separated from each other far enough to admit the thumb edgewise between the front teeth. The thin cicatrized edge of the skin, circumscribing the right angle of the mouth, was pared afresh preparatory to being adjusted to the lips. The next step of the operation was to prepare what remained of the lips and stretch them over to the right side, which was done as follows: Both lips were dissected up from the jaws, not only above and below, but also outward, on the left side, as far as the last molar teeth, after first dividing the mucous membrane on a line where it quits the gums to cover the cheeks. The upper lip was then detached by a horizontal incision, beginning below the septum nasi and carried through its entire thickness outward to an inch beyond the left angle of the mouth. The lower lip was also detached by a similar incision, parallel with the above, and crossing the upper part of the chin, and extending to the same distance. The free extremities of the bifurcated flap thus formed, and which was lined with mucous membrane, were pared, and the whole flap stretched across to the right side, where the ends were adjusted to the edge of the cheek already prepared for the purpose. Pin sutures wound with yarn were inserted to secure the ends in place, and also fine interrupted sutures in close proximity to hold the edges of the horizontal wounds in accurate apposition. The parts thus transfixed, having been so extensively detached from their subjacent and neighbouring connections, admitted of this new adjustment without any strain upon the sutures at any point.

Water dressings were directed to the face, and liquid nourishment ordered to be given through a tube. A moderate degree of inflammatory swelling followed the operation, but began to subside on the third day. On the fifth day nearly all of the sutures had been removed, union by first intention having taken place throughout most of the wound. Seventh day.—At the junction of the lip-flaps with the right cheek there is some

ulceration; elsewhere union is complete. Appetite is good, and general condition satisfactory.

July 5. Parts have all healed. An attempt has been made to prevent the closure of the jaws by keeping a wooden wedge between the teeth during the process of cicatrization. It could, however, be borne only a part of the time, and ultimately accomplished nothing.

The newly-constructed mouth, as shown by Figure 2, is small in size, and situated mostly to the right of the median line, the left angle being on a line below the orifice of the left nostril.

Fig. 2.

SECOND OPERATION.—*September* 26. Patient being in excellent condition of health, a second operation was undertaken, for the purpose of increasing the size of the mouth, and rendering it more symmetrical by extending it at the left angle. An incision was made along the line of the vermilion border circumscribing the left angle of the mouth, and involving both lips to the extent of about five-eighths of an inch. A double-edged knife was then inserted flatwise at the angle between the mucous membrane and skin, so as to detach them from each other in the direction in which the enlargement was to be made. The skin alone was first divided with strong scissors, on a line continuous with the commissure of the mouth, to the extent of three-fourths of an inch. The mucous membrane was then divided in the same direction, but to a less extent. A suture was then inserted at the angles of these two incisions to secure them in accurate adjustment. The newly-cut edges of skin and mucous membrane were next pared and matched to each other above and below, and brought into exact coaptation with fine interrupted sutures inserted close to each other.

On the second day following the operation the alternate sutures were removed, and on the fourth day all the remaining sutures. The result of this operation was a more symmetrically-shaped mouth, though still too diminutive in size, its length scarcely exceeding one inch and a half.

THIRD OPERATION.—In the month of May, 1867, patient was readmitted into St. Luke's Hospital, and a third operation performed, in all respects similar to the second just described, for the purpose of lengthening the mouth still further in the direction of the left angle. The result was very satisfactory in rendering the mouth more symmetrical and improving the expression of the face. (See Fig. 3.)

Fig. 3.

Though the operations hitherto performed had effected all that was anticipated in repairing the disfigurement of the face and improving its appearance, our patient still suffered all the discomfort incident to the closure of the jaws. The only way of introducing soft food was by pushing it on with the finger between the teeth and cheek, on the left side, till it reached the mouth behind the last molar teeth. On the right side, at the angle of the mouth, and corresponding to the first bicuspid teeth, a tense cicatricial band commences and spreads over the entire cheek, obliterating its cavity and binding the jaws in close contact. To relieve this very serious difficulty, and facilitate the introduction of solid food into the mouth, it was proposed to resort to Esmarck's operation of establishing an artificial articulation anterior to the cicatricial band on the right side. Patient's general health being good, and the parts involved in the previous operations being supple and in excellent condition, it was considered a

favourable moment for the operation in question, and it was accordingly performed on the 1st July, 1867.

FOURTH OPERATION.—An incision was made along the lower edge of the under jaw, from near the angle to within an inch of the symphysis down to the periosteum. The outer and inner surfaces of the jaw being denuded to the same extent, the bone was perforated by a drill of the size of a small quill, on a line below the first bicuspid tooth, to facilitate the section of the bone, which was completed with strong-cutting bone forceps. The same procedure was applied posteriorly, on a line below the second small molar tooth. The included fragment was removed.

Special care was taken to avoid wounding the facial artery by drawing it out of the way posteriorly. The only vessel requiring a ligature was the submental branch at the anterior angle of the wound. A mass of callous cicatricial tissue, in which the teeth of the upper jaw were imbedded, was pared away with blunt-pointed scissors. The newly-divided ends of the jaw were gnawed smooth with Lüer's rongeur forceps. The removed fragments measured one and a half inch in length. The anterior fragment of the jaw remaining in situ contained, in addition to the teeth belonging to the left half of the jaw, the incisors and canine of the right half, and could be separated from the upper jaw so as to admit a finger edgewise between the back teeth on the left side. This fragment also enjoyed the action of all the depressor muscles of the jaw which had not been disturbed at their insertions near the symphysis by the operation. A tent of lint of the thickness of the little finger was inserted, with one end passing out at the right angle of the mouth, and the other through the wound below the jaw. The posterior half of the wound was closed with sutures. The hemorrhage during the operation was inconsiderable, and patient bore it well under the influence of ether. Water dressings were directed to be kept applied to the face and neck.

July 6.—Inflammatory swelling has been moderate, and is now on the decline. Patient is up and going about.

Nothing in the sequel of this case requires notice except the final result, which was as follows:—

The space left after the removal of a portion of the lower jaw has become obliterated by the approximation of the divided ends of bone. A limited motion of the left half of the jaw exists, and very much facilitates the introduction of food between the teeth. Patient, as well as his parents, appears much gratified with the improvement in his condition, especially the greater facility of feeding himself.

ART. III.—*Embolism of the Central Artery of the Retina.*

By A. M. SPEER, M.D., of Pittsburg.

AMONG the various cases of sudden blindness occurring without any previous warning, in an eye which until that moment had enjoyed perfect immunity from disease, probably the most appalling, both from the utter destruction of vision and from the hopelessness of cure, is that which

occurs, as Stellwag says, "with the rapidity of lightning," and which is occasioned by embolism of the arteria centralis retinæ.

Virchow was one of the first, if not the first, to draw attention to the fact that "capillary embolia," "in certain cases occasions sudden occlusions in the vessels of the eye," and thus "produces amaurosis," but we are indebted to others for a description of the ophthalmoscopic symptoms, which indicate that condition. Without the ophthalmoscope to aid us such cases would be unintelligible, but its use reveals to us the fact that there are very few of the diseases of the eye which are characterized by more decided pathological changes than the one under consideration, and that the proper recognition of those changes may enable us to save the unfortunate victims from a protracted course of treatment, which must result without benefit to the patient or credit to the physician.

A case of this nature has recently presented itself to my observation, the details of which appear to be worthy of record.

J. D., twenty-nine years of age, a nailer in one of the rolling-mills in this city, consulted me February 3, 1868, in regard to his right eye, which had suddenly become blind the day before. He stated that, in consequence of a strike among the workmen, he had not been working for several weeks, and that his sight had been perfect until the afternoon of the previous day, when, being in his chamber, he had, immediately after raising his head from the basin in which he had been washing himself, "felt," as he expressed it, "as if his eyelid had gone shut." Surprised at this strange sensation, he looked in the looking glass to ascertain the cause, but discovered that the eyelid was open, as usual. He was still able to see a little with it, but in the course of a minute or two after, his vision was almost entirely gone. Supposing, however, that it was merely a temporary obscuration of vision, and that his sight would return again, he had not consulted any physician that day; but on the next one, the eye continuing to be in the same condition, he had been examined by a physician, who, after dilating the pupil with atropia, assured him that he could not see anything wrong with it, and that it would soon be well. Not being satisfied with that opinion he had sought other advice.

His vision, which continued to be in the same condition as on the preceding day, I found to be limited to a dim perception of the light of a burning kerosene lamp, when it was held in front of and to the right of him. When held in any other position, as directly in front, he was unable to see it. There was not then, nor had there been, the slightest pain in the eye, nor in any other organ. His sight, as has been already stated, had been perfect until the previous day. He had not been working or making any unusual exertion for several weeks, and he was utterly unable to assign any reason for the condition of his eye. His general health had been excellent, and in answer to my question stated that he had never had any venereal disease whatever. His left eye was unaffected, and vision with it was perfect.

On examining the eye itself, which was done about eighteen hours after his attention was first directed to it, I found the pupil to be moderately dilated from the use of the atropia the preceding day. With this exception the eye presented in all respects a perfectly natural and healthy appearance. There were not any external evidences of inflammation, or of any other

morbid action. Oblique illumination showed the lens and the anterior portion of the media to be transparent. On examination with the ophthalmoscope the vitreous humor was seen to be clear, and free from any evidences of hemorrhagic effusion, but the peculiar appearance of the fundus of the eye, which could be seen with unusual distinctness, immediately arrested my attention.

The fundus presented the usual reddish hue of a perfectly normal eye, but the optic disk, to which I first directed my attention, although natural in some respects, was paler than usual. It could, however, be seen in all of its outlines with the utmost distinctness, and was free from any evidence, which I could detect, of retinal inflammation. Just beyond the outer edge of the disk, and immediately above a line drawn through its horizontal meridian, was a small hemorrhagic spot, in size about one-eighth as large as the optic disk. The blood had evidently been recently effused. From this extended in a nearly horizontal line a whitish stripe, directly towards and a little beyond the fovea centralis, which appeared as a dark-red spot, and, by reason of the contrast with the whitish stripe by which it was surrounded, with extreme distinctness. The retina and choroid appeared to be, with this exception, in a healthy condition. Directing my view again to the optic disk for a more exact examination of it, the retinal vessels were seen to have undergone a remarkable change. The branches of the artery were much smaller than natural, and in those portions over the optic disk seemed to be almost, if not entirely, devoid of blood. They could, however, be followed over the papilla without any difficulty, but after they had passed on to the darker background of the choroid, it was only the larger branches which could be observed; the smaller ones it was impossible to follow. At several points in the larger branches the blood seemed to be interrupted and the vessel to be filled only at intervals; the portions between being empty. The veins were also much diminished in size, but not to the same degree as the arteries. They could with ease be traced in their course above and below the macula lutea, and partially encircling it; but were not in any portion as large in calibre as they usually are in the healthy condition.

The whole appearance of the eye was very remarkable, and at once recalled to my recollection a case of striking similarity which I had seen at the clinic of M. Liebreich in Paris, in the year 1866, and which was exhibited to us as a case of embolism of the arteria centralis retinæ. Remembering also that cases of that disease are generally accompanied by organic changes in the cardiac valves, or by at least a too feeble action of the heart, I examined that organ very carefully, but failed to detect anything abnormal.

Deeming it but prudent to refrain from giving any advice until I would have the opportunity of making another examination, I avoided expressing any decided opinion in regard to his case, but requested him to return the next day. On the following day, the appearance of the fundus was still more remarkable. The whitish stripe had enlarged very decidedly both in length and in breadth, and had become whiter in colour. It now extended beyond the fovea centralis for some distance, and its breadth now equalled about two-thirds of its length. This oblong patch was of a milky whiteness, and seemed to be destitute of bloodvessels with the exception of one or two small twigs near the fovea centralis. The outlines of the patch were not well defined, but seemed to gradually merge into the surrounding colour. The optic disk was not involved in this

whitish infiltration, as I judged it to be, except at a portion of the edge lying nearest to the macula lutea. The hemorrhagic clot was still very conspicuous, but the process of absorption had already commenced in it, as was indicated by the lighter hue of its edges. His vision had not undergone any change for the better, but continued to be as wholly obliterated as it was the day before.[1]

From all of the circumstances attending the case, viz., the instantaneous obliteration of vision, the entire absence of all pain and inflammation, and more particularly from the peculiar condition of the bloodvessels, I was led to believe that my supposition of the day before was correct, and that it was a case of embolism of the arteria centralis retinæ. The only doubt as to the correctness of this diagnosis was created by the presence of the hemorrhagic clot; the influence of which I could not determine to my own satisfaction. That it might have occasioned very serious functional disturbance was very evident, but that a single clot of so small a size could have produced such a total destruction of the whole field of vision I could not think possible; besides, the condition of the bloodvessels precluded the idea of its being the sole cause of the difficulty. After a careful consideration of the case, and for reasons which will be given more in detail hereafter, I was so convinced of the correctness of the diagnosis, as to give to the patient my opinion that his sight might, and probably would, improve to a slight degree, as I was led to hope, from the histories of the cases which I had read, might occur in this case; but that in all probability he would never regain useful vision with it. My only advice was that he should remain quiet, and should keep the eye secluded from the light. I did not prescribe any medical treatment whatever for him, as I believed that it would be entirely useless to do so.

Four days after, I saw him again, and found that the eye presented externally the same appearance, but that the whitish patch previously described, although of nearly the same dimensions as when last examined, had assumed a redder and more healthy appearance, as if the collateral circulation had been in some degree established. His vision had improved to a slight degree, but the improvement consisted more in an enlargement of the field of vision than in an increase of its acuity. He could discern the light of the lamp very dimly, over a larger portion of the field, but he could not indicate its position with any degree of precision. He could not see my hand or fingers when held before him in any position. Beyond this point the improvement of his vision has never since advanced, as I carefully tested ten months afterwards. The hemorrhagic clot had diminished in density and was being rapidly absorbed. The vessels were apparently in the same condition, with the exception that the whitish patch showed some small twigs creeping over its edges. I examined the vessels very carefully to detect, if possible, the peculiar intermittent movement of the blood in them, which has been described by Graefe and others, but could not succeed in doing so. The fovea centralis was still very apparent.

I did not see the patient again for nearly ten days, and when I again examined his eye the hemorrhagic clot and the whitish patch had entirely disappeared. The latter had been succeeded by the peculiar bluish tinge characteristic of an opaque retina. This was more decided than I have ever observed in any other instance. The fovea centralis had disappeared

[1] The author has made two very beautiful, coloured drawings, representing the appearances of the eye in this case, which we regret extremely not to be able to lay before our readers.

from view, and I could not again detect it. The bloodvessels remained apparently in the same condition as at the previous examination.

From this time I lost sight of him for about four months, although I had urgently requested him to visit me frequently, but, as he explained to me, he did not return because he did not observe any change in his sight. When I again examined him, I found the fundus looking healthy in hue; the blueness of the retina and all traces of the hemorrhagic clot had vanished. The optic disk had become exceedingly white and pearly, and presented in a marked degree the characteristics of atrophy. The arteries were much attenuated and looked like slender threads, and the veins were also very much diminished in size. His vision was not any more distinct, nor was the field of vision any larger than it was when I last saw him.

Since that time I have seen the patient but once, and found that his condition was in all respects the same. I again examined his heart, but failed to find anything wrong with it.

I have thus endeavoured to present the particulars of a case which, if my diagnosis of it was correct, is one of extreme rarity. A small number of cases of embolism of central artery of retina are reported to have been observed in Europe by Graefe, Liebreich, Schweigger, Wells, and others, but I do not now recollect having seen a report of any case which has been observed in this country. I have had the opportunity of seeing but one other case, already mentioned, that of a young man of about twenty years of age, who was presented to his class by M. Liebreich in Paris, whose vision had been lost in the same instantaneous manner, and the ophthalmoscopic appearance of whose eye was remarkably similar to that of the person whose case I have just described. Of the result of that case I have not learned.

It is perhaps proper to state, that Stellwag is skeptical in regard to such cases being attributable to embolism of the artery, but is inclined to refer their origin to a retro-ocular neuritis, or, in those cases in which only one branch is affected, to an inflammatory thrombosis. While cheerfully acknowledging his high authority in all matters relating to ophthalmology, I must yet confess my inability to understand how the effects of a neuritis could have manifested themselves so instantaneously, or how it could have produced in the arteries evidences of a stoppage of the circulation, which was evidently occasioned by some cause operating behind the papilla, and yet not exhibit any signs of an obstruction to the course of the blood in the veins. Any cause which would have produced pressure equally on the artery and the vein, as it is probable that a neuritis would have done, would naturally have been followed by an engorgement of the veins as well as by a decrease in the size of the arteries, which, at least in the case referred to, did not take place.

The same considerations dispelled the doubts which I at first entertained in regard to the small clot which was observed at the edge of the disk, as to whether it might not, after having been effused from some choroidal vessel, have exerted sufficient pressure on the nerve, and on the vessel within the nerve, to produce the effect observed. Had this, however, been the

case, the veins would probably have presented the same evidences of obstruction, whereas the free and uninterrupted passage which the blood had from the retina seemed to indicate that no such impediment existed. The presence of the clot could besides be explained by the fact, as stated by Stellwag, that "lessening of the blood contents of the retina always presupposes compensatory overloading of the choroid, by which the tendency to choroidal hemorrhages and their combination with detachment of the choroid in one case are explained."

The delay which has unavoidably occurred in reporting the details of this case have given me the opportunity of observing, during a period of about ten months, the various changes which have followed each other in rapid succession in the ophthalmoscopic appearance of the eye, and to note the very slight modifications which his vision has undergone since I first saw him. In regard to the latter, I could not indeed discover any improvement whatever after the date of his third visit to me, and the opinion which I gave him at the second examination has, unfortunately for him, proved to have been a correct one.

ART. IV.—*Clinical Observations with respect to Certain Pathological Conditions.* By F. PEYRE PORCHER, M. D., of Charleston, S. C.

1. *Distinction between Scrofulosis and Tuberculosis.*—In his valuable work on the Practice of Physic, Prof. Flint asserts that tuberculosis and scrofulosis are identical. Opposite views are held in a paper copied in *Braithwaite's Retrospect* for the year 1867.

For my own part, I have been struck with the marked *distinction* which exists between them. In the city hospital under my care in this city, I have several cases of tuberculosis of the lungs (phthisis or consumption). These patients have the moist crackling râles, the expectoration, the spitting of blood, the sweating, emaciation, etc., characteristic of the disease. There may be also in one or two of them tubercular disease of the intestines and mesenteric glands.

Besides these there are other cases of what I consider to be scrofulosis or struma, with *none* of the above symptoms; but they present all the features of scrofula, viz., enlargement and suppuration of the glands in the neck and groin, puffed and tumid lips, a tendency to the accumulation of pus under the skin (in the region of the head, as in one case), with *no* cough, *no* hemorrhage, *no* sweating, or any disease apparently of the lungs, intestines, peritoneum, or mesenteric glands.

The distinctive differences presented by the features in the two classes of

cases above described, seem marked, so much so as to constitute two diseases. In one, the morbid conditions, the diseased organs, are found within the body. In the second set, the cutaneous, external glandular (lymphatic), and cellular tissues seem affected, and the tendency is to a purulent softening or degeneration.

The essence of the maladies may be the same in both, but the characteristic features seem to be widely separated—topographically at least.

There is, besides, a striking contrast between "struma" and phthisis, with respect to the period of life at which they are most commonly found. Struma, or at any rate the strumous diathesis, is not unfrequent in children who are badly nourished and reared—hence the terms "strumous ophthalmia," etc.; whereas phthisis is comparatively rare in infancy. In an able review of the treatises of Lawson, Copland, and Alison, in the *American Journal of the Medical Sciences* for July, 1861, signed "A. S.," occurs the following passage bearing on this point:—

"The identity or close similarity of scrofula and phthisis, which he (Lawson) maintains in common with the greater number of pathologists, but in opposition to Lebert and others, furnishes an argument in support of his doctrine. In the latter, he affirms, the morbid element enters the venous radicles and reaches chiefly the lungs; in the former, it enters the lymphatics and affects the glands. Now, as the two affections rarely coexist—as, indeed, for the most part, they occur originally at different periods of life—it is not improbable, says Dr. L., that the manifestations of scrofula in the skin, glands, &c. may save the lungs from a development in them of tubercles. He does not suggest any reasons why the two forms of disease should occur at different ages, but one might perhaps be found in the great development of the lymphatic system in youth; nor does he consider the obvious objection that tuberculosis, as distinguished from scrofulosis, is very common, even from intra-uterine life, through all the stages which precede adult maturity."

Enlargements and alterations of the mesenteric glands, producing marasmus, and generally proceeding from diarrhœa and intestinal irritation, are frequently met with in infancy; but phthisis and pulmonary hemorrhage are, I think, very rare at this period of life.

In a note from Prof. Flint, recently received, and characterized by his usual clearness of statement, he says:—

"With regard to the difference between tuberculosis and scrofulosis, I have thought there were grounds to suppose an identity in essence; but the difference in manifestations is undoubtedly great, although the analogy between the processes which take place in a scrofulous gland and the tuberculous processes is striking. But the truth is, we do not as yet know the essential pathological condition in either case; and here, as in other instances, it is difficult to determine how far different manifestations of disease may be due to the same essential morbid condition."

2. *Hemorrhage from the Lungs not to be confounded with Phthisis.*—With reference, in the second place, to *hemorrhage from the lungs and phthisis.* It appears to me from my observation, that many cases of hemorrhage of the lungs occur in persons who have no tuberculosis, no bronchorrhagia, to use Flint's phrase, no pulmonary apoplexy, but who

seem to have bleeding simply from some engorgement or congestion of the lung.

In this class of cases there is never, or scarcely ever, any phthisis or consumption developed. The persons suffer from a bleeding of the lungs; they have often no night-sweats or emaciation; no fever, or great amount of protracted coughing. They recover perfectly, and enjoy a long life, after their friends have given them up, under the supposition that they must ultimately die of consumption because they have had hemorrhages.

The *absence of fever*, of purulent expectoration, of hectic, and perfect recovery, indicate the non-existence of phthisis; unless it be that incipient phthisis had existed, but recovery has taken place.

I know six persons, males, who entirely recovered and lived long lives (four of them now living) after suffering during early life from pretty violent attacks of hemorrhage from the lungs.

I think in this class of cases the bleeding was simply owing to temporary engorgement or congestion of the lungs, caused by some derangement of the circulation, with no tuberculosis whatever, as time discloses. A somewhat analogous condition is found in bleeding from the rectum from active or passive congestion or relaxation, where there is no serious or grave disease.

3. *Frequency of Serous Engorgement of the Lungs.*—In the constant practice of auscultation and percussion during a hospital experience of twelve years, since which I have been constantly in charge of such institutions, I have very frequently met with a condition of the lungs which I have been in the habit of designating in my clinical teaching before students as "serous engorgement," or simply pulmonary engorgement.

The lower lobes on either side are the parts usually implicated. There is some dulness on percussion, some deep-seated respiration, with rough breathing, and at times a little crepitation. Coexisting with such a condition there is neither pneumonia, bronchitis, tuberculosis, phthisis, or any cavity. The post-mortem examinations have repeatedly disclosed the unmixed character of the pathological state.

It is a result of neglected catarrhs, previously existing bronchitis or pneumonia in a chronic form, and sometimes the engorgement is partly hypostatic; but this term should be reserved for post-mortem changes, or those occurring just before death. I think the term used above can often be safely and properly used as a distinctive one, marking a substantive condition. The term "congestion" should be applied only to active determination of blood to the lungs, as in apoplexy, etc. In "serous engorgement" there is often a large amount of serous fluid mixed with air, which escapes on cutting into the lungs, and the dulness is not absolute when the patient is examined before death, as the lung tissue is still partly permeable to air.

This serous engorgement often also accompanies tuberculosis of the lungs, as, for example, when cavities or granular tubercular matter is found in the upper portion of the organs, the lower and more dependent portions are simply engorged with serum, and furnish corresponding auscultatory and percussional signs. But the morbid alterations referred to as existing at the base or more dependent portions of the lungs are not "tubercular infiltrations," which almost always have their seat under the clavicles.

If "serous engorgement" is one and the same with "œdema," then it exists much more frequently than the books would teach us to believe it does, and Laennec was wrong in stating that the crepitant râle characterized three conditions, namely: The forming stage of pneumonia, the congested tissues around a hemorrhagic spot, and œdema (in which he is correct as far as my experience goes), for in the serous engorgement described above the crepitant râle is rarely if ever heard. In true "œdema" of the lungs consequent upon measles the crepitant râle is heard over the entire region of the chest.

ART. V. — *Treatment of Fracture of the Inferior Maxillary Bone by an Improved Apparatus.* By WM. G. BULLOCK, M.D., Professor of Surgery in the Savannah Medical College. (With a wood-cut.)

FRACTURES of the lower jaw-bone and the difficulty of managing them have engaged my particular attention, from the fact of a number of such fractures having been under my observation in private practice, as well as in the public practice of the hospital in this city, of which I have been one of the attending surgeons now over twenty-five years.

It has occurred to me to see fractures at several different points of this bone, but most frequently at or near the symphysis, or the middle of the chin, which is accounted for by its more exposed position. One was a case of double fracture, where the line of fracture ran just anterior to the insertions of the masseter muscle on either side, leaving the central portion detached and lowered by the depressor muscles of the chin. It seemed impossible to remedy the displacement in this case by the ordinary means taught in the schools, and described in surgical works for the treatment of this fracture. So also did the ordinary means fail in another case of double fracture through the symphysis and of the body near the angle. In neither of these cases was Gibson's, Barton's, or the four-tailed bandage, though faithfully tried, successful in keeping the fragments in satisfactory apposition, even with the assistance of a paste-board splint and compress, cork wedges grooved to fit the teeth, ligatures of thread or silver wire

twisted around the teeth, or, lastly, the plan of Professors Mutter and Smith, of a leaden clamp or grooved plate fitted on the teeth.

I searched the many text-books and works on surgery in vain for a suitable apparatus to remedy the defects of the usual appliances in these cases. Surgical writers have not, I think, given the subject proper attention. They tell the student of the usual seat, etiology, and indications for treatment of fracture of this bone, what muscles act in causing displacement, and how they are to be counteracted, then the subject is dismissed by the assertion that there is no difficulty in managing any of the varieties of this fracture if the student will only apply a compress, mould a piece of pasteboard, or of gutta percha to the jaw, and bandage the part. In fact, any means may be resorted to capable of carrying out the indications of restoring the line of the jaw, drawing it up to the superior maxilla, acting as a splint, to prevent displacement upwards, downwards, or laterally.

Mr. Fergusson, after alluding to various pieces of mechanism that have been devised for treating this kind of fracture, and simply mentioning the ingenious invention of Mr. Lonsdale, remarks, "For my own part I should commonly prefer the pasteboard splint, cork, and bandage above recommended, which is the mode usually employed." Now, I contend, that for the rapidity of cure, and for the comfort of a patient suffering from a fracture of the inferior maxilla, these usual plans are totally inadequate where our object should be to cure our patient "*tute et jucunde.*" I have often been consulted as to how the difficulties accompanying the treatment of this fracture could be best overcome and obviated.

Mr. Lonsdale says:—

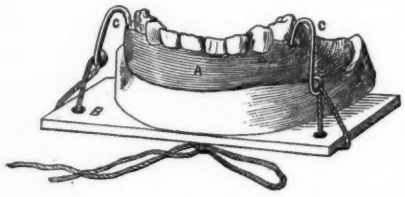
"I would make the following objections to the usual treatment employed in fracture of the inferior maxillary bone. 1. In fractures by the molar teeth, the one portion of bone is often much pulled upon by the action of the pterygoid muscles; that great displacement is produced inwards, and which the pieces of cork cannot overcome. 2. As the position of the fractured portions of bone depends upon the pressure that is made to keep the lower jaw fixed against the upper, the least loosening of the bandage or extra action of the muscles will be liable to disengage the pieces of cork, and to destroy the apposition of the ends of bone. 3. The necessity for keeping the lower jaw so firmly pressed against the upper is very uncomfortable and irksome to the patient by preventing him taking his food, or attempting to talk, which becomes very tedious when it has to be continued for a fortnight or three weeks."

These evils, which are met with in a greater or less degree in all cases of fracture of the lower jaw, led me to consider if some kind of instrument might not be invented, by which many, if not all of them could be guarded against. The objects I had in view were the following: "To fix the two portions of bone between two parallel forces by applying one on the teeth and the other under the base of the jaw; lastly, to keep the two portions of bone on the same vertical plane, by fixing them in a grooved plate, placed along the teeth." These Mr. Lonsdale gained by inventing the kind of instrument described and figured in his work on fractures.

"The instrument produces no inconvenience," he proceeds to say, "but gives great support to the jaw, and so much so, that some patients on whom it has been tried, have expressed a wish to have it reapplied, after it has been discontinued on account of the fracture having sufficiently united."

"The advantages gained by the above instrument appear to be the following: 1st. It is applied with much greater facility than the method of using the pieces of cork, and when once applied there is no fear of further displacement. 2d. The apparatus is applied to the lower jaw alone, which gives the patient great ease, and saves him from the necessity of keeping the mouth forcibly closed for so long a time. 3d. The motion of the lower jaw is not impeded by it, so that the patient can take his food with facility, and can talk without fear of displacing the portions of bone by which the cure is rendered much less tedious and irksome than by the ordinary method."—Lonsdale's *Treatise on Fractures*, London, 1838.

I procured one of Lonsdale's instruments and gave it a trial. While I indorse, to a great extent, much of what he claims as the advantages of the instrument, still I found it objectionable on account of its weight and size, not to say its unsightliness. I became, therefore, dissatisfied with it, and interested in seeking for some improvement upon this instrument less liable to objection, though acknowledging the inventor's merit in appreciating the true indications in the treatment and clear exposition of them. Having a case on hand at the time to treat, with the assistance of Mr. A. Wilcox, a very expert mechanical dentist, then of this city, I was enabled to perfect one to my satisfaction at least, and the contrivance represented in the above woodcut is the result of our efforts.



This instrument, as will be seen by reference to the figure, consists, like that of Lonsdale's, of a grooved plate (A) or dental splint made of ivory, metal, or vulcanized India rubber, accurately adjusted to the teeth or alveolæ (by first taking an impression of the jaw, as is done by dentists, in wax, gutta percha, plaster of Paris, or some pliable substance), to which grooved plate are welded projecting arms (C, C), of stout iron wire, about opposite the bicuspid teeth, or a point corresponding to the corners of the mouth, arched so as comfortably to project out of the mouth without interfering with the lips. Herein the instrument differs from that of Lonsdale's, whose grooved plate is attached to a vertical bar passing over the centre of the lip, and is consequently more inconvenient to the patient than the former, the arms of which emerge *at the corners of the mouth.* The ends of the projecting arms are bent to form holes through which pieces of cord, thread, or wire are passed to attach the dental splint to a piece of wood (B), say a portion of a cigar-box cover, for a chin piece, placed under

the jaw, serving the purpose of a submaxillary splint. This latter should have four holes in it, two on either side, to make it more secure.

This comprises the entire apparatus, and is applied to a fracture of the lower jaw, whenever the fracture is in the body of the bone by fitting the dental splint to the teeth, placing a compress of patent lint or some soft material between the under surface of the chin and the submental splint, then tying the tails of the thread, or twisting the wire previously passed through the holes in the latter splint, as seen in the wood-cut, to the projecting arms of the former, thus doing away with the necessity of *bandages over the head altogether.*

After trying the usual methods by bandaging unsuccessfully, as well as the instrument of Mr. Lonsdale, this apparatus was applied with the most *satisfactory and agreeable results.*

The dental splint is represented as being fenestrated; the object of this is to allow the teeth of the upper and lower jaw to dovetail, or articulate with each other, as the dentists say, in cases when there is an inequality in the size of the teeth, or irregularity in their position, so as to bring the fractured ends of the bone into perfect coaptation, without one or two projecting teeth interfering with an accurate adjustment of the fracture. If this apparatus is properly understood and applied to the fractured jaw the patient can go about his usual avocations, *take his food, and talk without fear of displacing the fragments of the broken bone,* and without the necessity of wearing a bandage or handkerchief tied over the head.

The objects had in view are precisely those laid down by Lonsdale, and the advantages, such as lightness, adaptability, simplicity, and convenience, gained by this instrument over that of Lonsdale's, or any of those figured in *Hamilton on Fractures,* or in Wales' *Mechanical Therapeutics,* cannot, it appears to me, be disputed.

ART. VI.—*Chromic Acid in the Treatment of Menorrhagia and Uterine Leucorrhœa.* By DAVID WOOSTER, M. D., of San Francisco, Cal.

IT is unnecessary to preface this article with an elaborate account of the physiology of menstruation, or the pathology of menorrhagia; it is sufficient to premise that the uterus is lined with mucous membrane, which consists of mucous follicles, tubular in shape, arranged side by side, and perpendicular to the uterine surface. These follicles open into the cavity of the womb, and their opposite extremities are closed and in direct contact with the subjacent uterine tissue. These follicles are surrounded with vessels which inosculate with each other. The uterine mucous membrane is

scantily supplied with nerves, the majority of whose filaments are derived from the spinal cord. From this latter fact results the alarming shock and the prolonged tendency to syncope, which often occur after the most trivial interference with the uterine cavity, especially when the uterus or its lining membrane is inflamed.

Menorrhagia, like menstruation, occurs from the whole mucous lining of the womb, and is merely an excessive exosmosis or transudation of blood from the vessels into the mucous follicles which they surround. From the open mouths of these follicles the blood is poured into the cavity of the womb, from which it readily escapes through the patent *ostia*, to be replaced by a fresh supply, and so on, until the congestion of the uterine vessels is relieved in menstruation, or until the excessive setting of the hemorrhagic current in menorrhagia is diverted; *a*, by cessation of the heart's motion, as in syncope; *b*, by changing the plasticity of the blood, as in the use of iron and cod-liver oil; *c*, by contracting the uterus and the muscular coats of the vessels, as with ergot; *d*, temporarily, by mechanical means, as with a vaginal tampon, by which a clot is produced in the cavity of the womb, to be afterwards expelled by labour-pains or to undergo solution in a more abundant transudation of blood; or, finally, by any means which shall arrest the transudation of blood over the whole mucous surface. For example, by an astringent escharotic so mild in its astringency as not to coagulate albumen before it has had time to penetrate the full thickness of the hemorrhagic membrane, and so promptly and efficiently escharotic as to condense the follicles, so that no more blood can be poured into them through their patulous walls, or through such portions of them as are already denuded of epithelium by persistent hemorrhage.

Tincture of iron fails in this indication, because it immediately produces a clot which constantly increases from subjacent accretion. Tannin or alum acts similarly. Solid nitrate of silver produces a solid superficial eschar, which, falling off, leaves a new hemorrhagic surface; and furthermore, it acts on the uterine tissue much as it does on the glans penis in chancre, producing increased congestion and painful erection; or in the womb a sense of extreme tension, described by the patient under the terms "bearing down," "fulness," etc.

Zinc and lead lack the cauterizing quality requisite, except the chloride of zinc, which is far too active if used in cauterizing strength, and dangerous to life from absorption, if used in milder dilution.

Thus I was led to use *chromic acid*.

Chromic acid (CrO^3) is isomorphic with ferric acid (FeO^3), and it is probable that chromic acid is as harmless when absorbed into the blood as manganic or sulphuric or ferric acids, with which it is isomorphous.

Chromic acid is an oxidizing agent of slow but persistent action, and of considerable power on account of the facility with which it is reduced to

the sesquioxide of chromium, isomorphous with sesquioxide of iron, and quite as harmless to the economy in certain doses.

CASE.—Mrs. —— had menorrhagia for years. She was ostensibly a tolerably respectable lady, but really accustomed to "love not wisely, but too well." Her menses hardly ever stopped entirely. Occasionally she would have an interval of two days of cessation of the flow. Often it was a flood stopping only with syncope. She had used, under advice of different physicians, alum plugs, cotton tampons saturated with tannate of glycerine; she had taken iron and cod-liver oil to increase the density of the blood; she had taken lead and opium to increase the plasticity of the blood, diminish irritability and constringe the capillaries. She had ergot to contract the arteries and the womb; she had digitalis and aconite to diminish the frequency of the heart's systoles; she had blisters to the sacrum to divert the blood current; and leeches to the ovaries for the same purpose; she had ice-cold compresses applied to the abdomen over the womb; the foot of her bed had been raised six inches higher than the head, and she had lain in this position a week at a time. Everything afforded but temporary relief. She was one of those unfortunates for whom "everything had been done."

When I saw her she was anæmic, and almost pulseless; her nose and ears were cold, and her respiration yawning and sighing. I plugged the mouth of the womb with a sponge tent, prepared with carbolic acid, and gave her beef-tea for twenty-four hours. On removing the tent the hemorrhage was as bad as ever. I examined the uterine cavity with the index, and found no abnormal growths; I then washed out the cavity with a warm solution of iodine and water. This arrested the bleeding for ten hours, when it returned as before. I now washed it out with a solution of perchloride of iron, ten drops to the drachm of water. This caused a coagulum, which was expelled in less than twenty-four hours with renewed hemorrhage to the verge of syncope. Then I had recourse to chromic acid. I dissolved half a drachm of chromic acid in a drachm of hot water, and the mouth of the womb being so patulous as to admit the index finger, there was no risk of the fluid being retained by contraction of the os internum, and so I immediately injected the whole amount through an ordinary No. 12 gum catheter, passed up to the fundus. The most of the solution flowed back by the side of the catheter, a yellowish serosity with no coagula. I withdrew the catheter, deterged the vagina with a soft sponge, left the speculum *in situ*, exposing the os uteri for some minutes; but, as not a drop of blood issued, I removed the instrument. There was no more hemorrhage until the expiration of nine days, when the menstrual period having arrived, it became menorrhagic, and was allowed to continue for three days, when I again injected chromic acid precisely as at first. It has now been ten months. Menstruation has been regular in time and quantity ever since. My patient is in excellent health, and has as ruddy a look as most women of thirty-five—her age.

I have now used chromic acid in several instances, both for menorrhagia and uterine leucorrhœa, with uniform and absolute success. I use the chromic acid in leucorrhœa in the strength of fifteen grains to a drachm of hot water, having first dilated the cervix with sponge tent. One injection is generally sufficient, when the general health is not seriously impaired.

The injections in any event should not be repeated in less than four or five days; unless the cervix be well dilated before the injection, the most alarming collapse may supervene in a few moments. The same thing will often happen even if the cervix has been well dilated, unless the patient remain in bed at least twenty-four hours after the injection. Notwithstanding these *possibilities* of harm, the chromic acid is perfectly harmless if used with the precautions suggested; and if it will cure a chronic uterine leucorrhœa, it is certainly worth the trouble of being carefully handled, and its *possible* dangers are no greater than might result from the careless use of salt and water. If labour-pains and tendency to collapse should supervene from the carelessness of physician or patient, hot fomentations to abdomen, lavender and ammonia or brandy internally, with absolute rest in bed, will afford prompt and permanent relief.

SAN FRANCISCO, May 27, 1869.

ART. VII.—*Complex Obstetrical and Surgical Case; Tedious and Instrumental Labour; Intractable After-Pains; Pilo-Cystic Tumour of Left Broad Ligament; Extirpation by Abdominal Section; Menstruation through Wound; Recovery, with Ventral Hernia.* By R. W. GIBBES, M.D., of Columbia, S. C., formerly Vice-President of the "American Medical Society in Paris," and Interne Pupil of the Rotunda Lying-in Hospital, Dublin. (Read before the South Carolina Medical Association, and referred to the Committee on Publication, May 21, 1869.)

MRS. S., æt. 26 years, has had two children (youngest now 13 months old), and was attended by me in both cases of natural labour. Before marriage, ten or twelve years ago, I had her under my care for *suppressio mensium* during several months, when she suffered with severe abdominal pains. A galvanic supporter appeared very useful in restoring the regular flow.

July 25 *and* 26, 1867. Suffered greatly with spurious pains. Tr. opii ℥j, by enema on 26th, P. M., gave relief. 28*th*, A. M. Taken at full term—labour tedious. At 9½ P. M. *os tincæ* one inch in diameter and rather rigid; complained of much fatigue and begged for chloroform. While under its influence I examined more thoroughly; found head in 2d position, one hand being engaged with it in superior strait; membranes ruptured spontaneously two hours ago. I succeeded in passing four fingers within the *os*, which had become more relaxed, and pushed the hand away from the head. Suddenly, an involuntary evacuation occurred after withdrawal of chloroform with much relaxation and feeble pulse. A few moments after being awakened, she had another watery and offensive stool, and fainted. ℞.—Vapour of ammonia to nostrils, cold water to face, and aq. ammon. gtt. x as she recovered consciousness.

After 15 or 20 minutes a third liquid motion with disposition to syncope. Uterine action moderate at intervals. ℞.—Tr. opii gtt. xl; acet. plumb. grs. x; spts. vin. Gall. ℥j; aq. font. ℥ij, given by enema. After half an hour pains stronger, but head does not descend. The *os* being now quite relaxed and dilatable, I applied Hodge's long forceps without chloroform, and succeeded with little difficulty in effecting the delivery of a fine living female child weighing about 8½ lbs.

Aug. 5. A. M. Since her confinement I have paid one and often two visits per day. Patient suffered with most intractable after-pains, and received only temporary relief from usual remedies, *e. g.*, camphor, hyoscyamus, morphia, elixir of opium, chloroform, etc. Citrate of magnesia on third day acted three times. Fundus uteri appears unusually prominent above pubes, and too tender to allow of pressure; lochia natural; milk abundant, and no fever. At my request Dr. D. H. Trezevant was called in. After a careful examination we discovered above and behind the pubes an ovoid tumour, size of a turkey egg, tender, and movable upwards and *towards right side* away from the uterus, fundus of which can then be felt in its proper site; involution progressing normally. *Per vaginam* the tumour cannot be touched, and after employment of uterine sound along with careful palpation I am positive it has no connection with uterus even by a long pedicle, nor do I consider it ovarian, as it can be pushed too far up in the mesial line, although it inclines *to the right.* It may be attached by pedicle to liver or lumbar vertebræ, but is more probably connected with omentum, broad ligament, or perhaps with the mesentery. ℞.—Pil. hydr. gr. x, to be followed in four hours by ol. ricin. ℥ss; cataplasms locally. 9 P. M. Medicine acted well, patient easier, tumour softer, fomentations continued. She took hydrarg. submur. 2 grs., pulv. Dov. 6 grs., about four times a day, for a few days, until slight ptyalism occurred. More anodyne being sometimes required, one-half grain of morphia hypodermically was found most efficient.

11*th.* ℞.—Potass. iodid. gr. iv; ferri citratis gr. ij, three times a day; and in intervals a pill of camphor and ext. hyoscyamus, each two grains. A thick plaster of extract of conium ordered to be kept over the abdomen.

19*th.* Tumour a little larger, and patient suffering much. One dozen leeches applied with some relief, and after a few days five more were used. Iodine daily employed externally.

Sept. 4. Dr. T. and I examined patient under influence of chloroform, but could observe very little change except that the tumour had descended so as to be felt *per vaginam in anterior cul-de-sac.*

17*th.* Again under chloroform it is felt in vagina in front of uterus, quite solid, and movable. Catheter and uterine sound confirm my opinion that it has no immediate connection with uterus, bladder, or ovary.

30*th.* Since last date I have only seen my patient once in two or three days, although she suffers but little less. I was called at 10 P. M. last night, and had to give one-half grain of morphia hypodermically to relieve pain. She takes two grains camphor and one-half grain morphia when necessary, sometimes repeating in one and a half or two hours unless I am at hand to use hypodermic syringe. I have expressed apprehension of malignancy, and several intelligent members of the family are dreading it. Her third cousin, an interesting young lady, died three years ago from encephaloid disease, involving ovary, liver, and bowels.

Oct. 10. Tumour about five times as large as when it was discovered, say the size of the largest shaddock, and her sufferings are very great. Dr.

Trezevant, having seen her again, agreed with me that the only chance of life would depend on extirpation. Her husband assented to it, though informed of its gravity. Prof. J. J. Chisholm, of Charleston, had come up at my request to meet me in consultation and assist in the operation. At 11 A. M., everything being in readiness and patient being placed under chloroform, Dr. C. made a thorough examination and concurred in the opinion that the tumour was probably *malignant and omental.* It was so movable that although it could be felt *in anterior cul-de-sac* (and without any fluctuation), yet by external palpation it could be grasped and pushed up almost to the xiphoid cartilage. The following gentlemen, who were present by invitation, were then called into the room, and to each one of them, as well as to Dr. Chisholm, I take occasion to tender my thanks for their very efficient assistance, viz., Drs. D. H. Trezevant, A. N. Talley, S. Fair, E. D. Smith, and T. T. Robertson.

I made the incision, as is usual in ovariotomy, along the *linea alba* from an inch below the umbilicus to within about an inch of the pubes. On opening the peritoneum nausea occurred; and the small intestines protruding, these were enveloped in flannels wrung in warm water and then drawn over on her right side, external to abdomen. Incision proving too short, it was extended around and for two inches above navel. Tumour now seen and felt to be a fluctuating cyst with very firm and vascular walls. Trocar introduced and nearly a pint of pus evacuated, taking the precaution to allow none to get within the peritoneum. Its attachment was to *left broad ligament*, and from three to four fingers in breadth. The collapsed tumour being now lifted out while Dr. C. exercised traction upon it, a long curved needle, with eye near the point and threaded with a double ligature of strong saddler's silk, was passed through the centre of the pedicle, each half tied with separate threads, both ends of one ligature cut off close while the other two ends were carried around the whole pedicle, and again secured as tightly as I could draw them. When about to tie the second ligature it was discovered that I had included nearly three inches of the Fallopian tube, which was much elongated and turned up, lying closely attached to the inferior and inner or right wall of the cyst, while its fimbriated opening remained floating. Here I thought of dissecting off the tube and leaving it, but yielded my opinion in deference to that of Dr. C., who considered it unnecessary. Dr. Chisholm, on introducing his hand, said he felt the left ovary intact and *in situ.* The pedicle was now held with a hæmorrhoidal clamp, while I excised it with a bistoury half an inch beyond the ligatures, thus removing the cyst and more than two inches of the Fallopian tube. On relaxing the clamp and seeing that there was no bleeding from stump the small intestines were carefully replaced with but little difficulty. All oozing soaked up with soft flannels and sponges squeezed in warm water. A curved needle armed with silver wire was now passed through right lip of wound (including peritoneum) half an inch from its inferior end, then through the pedicle one-quarter of an inch external to the silk ligature, and lastly through whole thickness of left lip. Edges drawn together and the ends securely twisted, the silk ligature having been brought out at the angle of the wound just below. Nine additional long silver sutures were then introduced, but before the coaptation of the edges, retching occurred and patient had to be turned on her side, the intestines again protruding and forcing out one wire, which gave us some inconvenience. The bowels, however, were soon replaced, oozing soaked up, edges of wound brought together, wires twisted tightly, and

three fine silk sutures introduced superficially, near the navel, to close wound more evenly. Thick strips of lint folded several times were laid along on each side of incision, supporting ends of wire, and a third one placed directly upon them in mesial line, and secured by five broad adhesive straps, reaching three-fourths of the way around to the spine—the whole surrounded by an ordinary towel as a binder. She bore the operation pretty well. Flannel drawers were put on, hot bottles to feet, and temperature of room maintained at about 65° Fah. The operation and dressing occupied one hour, and hardly more than three ounces of blood were lost. On laying open cyst it was found to contain in the bottom some thick curdy pus with fat globules inclosing a mass of fine black *hair*, resembling very much that of *mons veneris*, sufficient in quantity for a respectable goatee, and varying in length from one to three inches.

On awakening from chloroform she complained of great pain, and a pill of two grains of opium was introduced into rectum. She clamoured loudly and begged piteously for more chloroform; took sixty drops tr. opii mur. in brandy half an hour after pill, and continued to suffer so much that little relief was obtained until three suppositories of two grains opium each, two half grain doses of morphia hypodermically, and one enema of a teaspoonful tr. opii had been given at intervals of about an hour. A warm poultice was applied three hours after the operation; catheterism every six or eight hours, brandy and small lumps of ice occasionally, pulse being weak.

11*th*. I remained the greater part of the night; patient comparatively easier this A. M.; has vomited once, which gave great agony; pulse 90, and of fair volume and strength; taken several enemata of beef essence or chicken soup, ℥ij, with ℥ij tr. assafœtidæ or essence of mint; flatulence and hiccup giving great distress; swallowed lime-water, mint, or cinnamon in small doses.

12*th*. Had rather a better night, although she vomited once with much pain, and complained of great soreness and tightness; still the abdomen is but little swollen; small quantities of chicken soup by mouth allowed, but enemata continued. 12 M. So much "dragging pain" that on removing dressings and finding great puckering at lower end of wound, I thought of removing the inferior silver suture which holds the pedicle. On untwisting it, however, there was such a sensation of relief that I let it remain after twisting the extreme ends only twice together to prevent its being drawn within abdomen. After this she was decidedly better. Wound appears united, although edges are rather too red in middle and inferior portion; removed two silk sutures and applied hop poultices. 10 P. M. Patient better; pulse 82 and stronger, but flatulence still; refers pain and soreness chiefly to right iliac region and right thigh; allowed her to turn on her left side, but in an hour had to be placed on her back again. At midnight flatulence gives much pain, and countenance is bad. R.—Tr. opii ℥j, tr. assafœtidæ ℥ij, beef essence ℥ij *per anum*. In a few moments, painful eructations, and then emesis ten minutes after the enema, when she tasted, and I perceived odour of the assafœtida in fluid vomited; after this rested much better.

13*th*. Better; pulse 82.

14*th*. About the same, but flatulence still troublesome, and she says stomach feels too tight; drinks milk freely, and tried calf's foot jelly, but prefers former. 1 P. M. I examined wound and found inferior suture drawn in by pedicle so that the twisted point was barely visible; removed

it, but not without pain, and two or three drops of pus issued from orifices, which are too red, as there has been too much tension on them. 4 P. M. Has been much better until just now, when bowels acted with great pain; countenance distressed; pulse 92 and small. ℞.—Mint julep freely, and an enema of beef essence ℥j, tr. assafœtidæ ℥ij, to be repeated with tr. opii ℥j should another evacuation occur. 8 P. M. Has had two evacuations with much wind, last one profuse, and just taken enema with tr. opii; skin relaxed and cool; pulse 112 and weak; soon rallied, however, under brandy and milk every half hour, and I left her at midnight sleeping well, although she had complained much of pain in right side and thigh.

15*th*, 9 A. M. Better countenance; rested pretty well, although the pain in right side persists; pulse 96 and weak. ℞.—Ferri redact. gr. ij, ext. gent. gr. j three times a day; beefsteak and hominy for breakfast was relished, and repeated in the P. M.; champagne also at intervals. 11 P. M. Right thigh has to be supported on a pillow, rubbed with camphor, and kept constantly warm, with hot bottles and hop poultices to right side of abdomen. ℞.—Enema of tr. opii ℥j, tr. assafœtidæ ℥j, chicken soup ℥ij; brandy and milk or champagne through the night.

16*th*. Passed better night; pulse 104 and weak; on right of incision and below its middle some hardness and tumefaction, but bears pressure well. 1 P. M. I dressed wound and removed two sutures below and one above central one; union perfect above, and for one and a half inches below umbilicus, but on carefully squeezing for a half hour I got about half an ounce of pus, principally from the right side, the seat of the tumefaction. Expressed herself as much relieved; eats broiled chicken and light bread, and finished a pint of champagne; prefers curaçoa cordial now. 9 P. M. Pain in right leg disappeared, but it feels tired, and it is hard to rest it; turned on left side for half an hour.

17*th*, 7 P. M. Wound discharging; right leg has to be rubbed; had three evacuations this P. M., after which took enema at 6 P. M. containing 40 drops of laudanum; pulse 108 and weak; drinks brandy freely. 11 P. M. Called me in haste; "bleeding;" I found discharge of red bloody matter exuding from inferior extremity of wound; removed plasters and pressed out in all two or three tablespoonfuls, *but no fresh blood.*

18*th*, 8 A. M. Sent for in haste; "bleeding very free." After dispatching the messenger for another physician to assist me, fearing that I might have to open the wound and ligate a vessel, I hurried there and was relieved to find only same state of things as last night, although patient was much agitated, and pulse 108. 10¼ P. M. Clear of pain all day for first time; pulse 90 after catheterism; has eaten soft egg twice to-day, and drinks brandy and milk; two evacuations to-night, and took paregoric ℥j.

19*th*, 9 A. M. Slept one hour and a half on right side, then again on back and rested well whole night; pulse 88; ate beefsteak and hominy for breakfast; wound discharging sanious pus from inferior extremity (where the next to the lowest suture has cut through), and thick laudable pus from two small orifices, one above and one just below central suture, which is still remaining; dress wound daily. I assisted in lifting her into another bed, and she is more comfortable.

20*th*, 8 P. M. This A. M. I removed the two remaining sutures, one central and the other near inferior end. A few drops of a solution of permanganate of potassa are dropped on the lint. One evacuation at 2 P. M., when she relieved her bladder for the first time *soi-même*, another at 5 P.

M., and also at 7 P. M.; catheterism no longer necessary; perspiring freely; very little discharge; infant to breast.

31*st.* I have visited patient once daily since last date to dress wound. Since several days it is firmly cicatrized except three quarters of an inch at lower end where it appeared last week to be filled with proud flesh, but now it is seen to be a protrusion of the pedicle stump, the bottom of the wound being pressed open just where the suture cut out. A double thickness of oiled lint one and a half inch long is laid on it, and held in place by strip of plaster, and changed once daily; ligature holding firmly, a small piece of lead is attached to exert gentle traction. Complained last P. M. and again to-day of pain in left side; evacuation usually once a day; allowed her to sit up out of bed for two hours.

Nov. 4. Patient sits up some hours every day, but occasionally has pains on either side of abdomen, apparently in bowels, which are often tympanitic; perhaps a little imprudent in eating fried oysters, &c.; ligature still firm, and pedicle seems to protrude more every day. On left side it is firmly attached to whole extent of opening, but not so on the other, so that on the right the ligature can be carried from inferior to superior edge of the protrusion. I am in hopes soon to be able to see the constricting portion of ligature and remove the whole.

16*th.* On Tuesday, the 12th, after usual pain, menses began, and continued until 15th P. M. On again dressing the wound daily the lint showed that some sanguineous discharge escaped *by orifice*, although I could not squeeze out any by repeated pressure; ligature still firm. A few days afterwards she rode out, but bad weather prevented it again for some time.

22*d.* I tied extruded pedicle with waxed thread, and on 24th found it off, but old ligature still holds firm, not yielding to moderate traction. In walking patient leans forward and uses a stick, as there is an unpleasant feeling of tension about orifice over pubis, which she attributes to the presence of the ligature.

Dec. 12. At 5 A. M., just thirty days from last menstruation, taken "unwell" after severe pains for near twenty-four hours, reminding her of dysmenorrhœa before her marriage (with which she had suffered for several years, but not since). I found lint soaked with blood (13th) and with catamenial odour *sui generis*. On 13th, 14th, and 15th, discharge more profuse than she ever knew it to be—so much so that she had to lie still much of the time and to take several astringent doses. Lint over orifice changed daily, each time showing traces of blood.

16*th.* Catamenia much less; patient up and dressed.

18*th.* 9 P. M. Discharge stopped since yesterday P. M.; has been up and exerting herself a good deal to-day, lifting second child, &c. On going to bed observed bleeding from orifice, about two teaspoonfuls, which was gradually checked after using cold water freely.

19*th.* A little more blood from orifice and soreness in left ovarian region for two days.

21*st.* Slight soreness still, and she noticed night before last that left side contracted curiously, "as if there was another tumour there."

Jan. 12, 1868. Taken unwell night before last, with much pain; yesterday very *free;* exerts herself too much, although aware that lifting her children, &c., does harm. Slight bleeding by orifice the first two days; menses last four and a half days. A week subsequently a little more bleeding from the opening was brought on by the same imprudent exertion.

Feb. 8. Severe cold, cough, and bearing-down pains. I examined and on drawing the ligature it came away with the knot, having rotted and broken in the portion that constricted the pedicle—just four months after the operation.

10*th.* Menses began last night with pain and oozing of blood from orifice (after purulent discharge had increased for a day). Catamenia now very free. She *would* exert herself lifting the children, and washing one this A. M. Cough also very bad. ℞.—Tr. opii deodor. gtt. xxx, syr. ipecac, tr. tolutani, āā gtt. xx. S.—To be repeated every three hours if necessary. In two days after menses stopped the orifice was closed.

April 8. Been better lately, except that a month ago took a violent cold and cough, in consequence of which she suffered a great deal at monthly period. Taken unwell to-day, *without pain*, but "cough came back with it," and *on the 9th* there is great soreness in abdomen along the line of incision, but no other pain.

14*th.* Much better in all respects, but she limps badly—cough all gone.

June 7–11. Menses for three days without pain. As they diminish on the fourth day there is soreness along *linea alba*, and the inferior extremity of cicatrix is red and tender. Applied solid nit. argenti to exuberant granulations twice. Discharge ceased on sixth day.

16*th.* 11 P. M. Violent pain came on this evening after riding out and being jolted in a carriage. Two doses of McMunn's elixir, fifty drops each, had failed to relieve, and I was called. After hypodermic injection of one-third grain morphia she soon rested.

17*th.* She is nauseated from anodyne, and feels quite sore in the cicatrix but not in the ovarian region. Pain returned at night.

18*th.* ℞.—Quiniæ, 3 grs. every two hours. The fifth dose affected head.

19*th.* Took three more doses at three hours interval, and was relieved until 9 P. M. on the 24th, when she was attacked violently after unusual exertion in attending to household duties. After two doses anodyne I was sent for at 10 P. M. ℞.—Chloroform. ℥j, ℥ij, at once, and repeated in twenty minutes with but slight relief until very soon after I had injected one-third of a grain of morphia subcutaneously.

25*th.* P. M. She is a good deal nauseated and sore. ℞.—Acid. arsen. gr. one-twentieth; strychniæ, gr. one-thirtieth; morphiæ, gr. one-twentieth; ext. aconit. gr. one-half; quinia, grs. two, three times a day.

26*th.* The second pill to-day produced headache, so omit the third and only take one A. M. and P. M.

July 7. Menses since the fourth without pain (she says pills prevent it, and she has taken twenty-one in last ten days, although they make her head uncomfortable).

Aug. 1. Menses again without any pain; lasted only three days; then complains of an uneasy feeling at inferior extremity of cicatrix, and a sensation like pins sticking in left iliac and hypogastric regions.

Aug. 31. Unwell, 27th to 30th inclusive. Considerable pain during and for a week before, although for a fortnight previous was "perfectly well" and going about as well as ever in her life, with no occasion to take the pills. In past week had to take one or two every day.

Oct. 2. Menses 26th to 30th ult. quite free, without pain, but some bearing down. A fortnight ago she complained of a dragging pain after exertion, and of a soft protrusion at lower part of cicatrix, giving the abdomen a curious conical shape. I insisted on an examination, and found, as anticipated, a *hernia* at the *linea alba*. Orifices of the lowest silver

suture, instead of being one inch apart, are separated just two inches; the space between the recti muscles allowing the protrusion is a vertical triangle with base of one and one-half inch and sides extending to apex above, near the umbilicus, almost three inches. The hernia consists of omentum alone, and on pressing it back I can feel fundus uteri with great facility. With the assistance of my ingenious friend, Dr. Ed. Smith, Demonstrator in University of South Carolina, I had an abdominal supporter made with a wooden pad attached to the lower extremity of a vertical steel spring, which fits over the opening and enables her to go about with comfort.

May 5, 1869. Mrs. S. is very well except that at intervals of a few weeks she complains of abdominal pain and soreness, with tympanitic distension, always referable to imprudent exercise, and of distressing and obstinate character, rendering it necessary to repeat Dr. Gross' neuralgic pill a second or third time to relieve. She is most apt to suffer at approach of or during the catamenial period, although she has occasionally been unwell without pain before or afterwards. Two or three months ago I called Dr. Jno. T. Darby in consultation to consider the propriety of an operation with a view to obliterate the orifice, but we agreed that no attempt of the kind was advisable. She is now quite well (May 17th), and the hernial opening appears smaller since giving up the fatigues of housekeeping a short time ago—just nineteen months after the operation.

In detailing this interesting case there is one point which it is due to truth and to Dr. Chisholm that I should refer to. That gentleman, to whom I am indebted for most important aid in the operation, and who had only a short time before enjoyed the privilege of seeing ovariotomy performed several times by each of the two world-renowned London operators, has changed his opinion respecting the *locale* of the cyst. He thinks he must have been mistaken when he said *he felt the left ovary in situ*, but that the growth should be considered as properly *ovarian* since dermoid and pilous cysts of the broad ligament are "extremely rare, always small and give no trouble, and besides it would not likely have been felt *in the Douglas sac* unless ovarian." In these views I cannot concur, and regret extremely that the point was not definitely settled *sur le champ*, as should have been done by myself, the operator, had I reflected on it in time, instead of being too anxious to avoid unnecessary manipulations and exposure of the cavity. Dr. C.'s memory, too, is most certainly at fault if he thinks he felt the tumour *in the posterior cul-de-sac*, for at no time did any one who examined her find it there.

On microscopic examination the contents of the cyst were found to consist of *pus, fat globules, epithelial particles, and hair.* *I* think that *the symptoms* conclusively prove that it was *not* ovarian. Eight days after delivery, a tumour *of less size than the fist* is felt *in the right hypogastrium*, so extremely mobile that it can be pushed up to the gall-bladder, where the left ovary never could have reached unless it had attained a much larger size, but we do not feel it *per vaginam.* One month later, however, after the uterus is diminished in size and descended low in the pelvis, we easily touch it underneath, *but in the anterior cul-de-sac*, as if

connected *with the bladder*. Two and a half months after her confinement the same thing is observed, but with increased volume and suffering, and when extirpation is resorted to we are amazed to find *a broad attachment to the left side*. (*!!*) How could so small an *ovarian* tumour have stretched the proper ligament of the ovary so inordinately as to become thus migratory in spite of intense suppurative inflammation within its walls, and which should have fixed it immovably in the left iliac region, as in ovarian abscess? And why, if ovarian with a *very long* pedicle, did it not descend in the *Douglas sac*, instead of *in front* of the uterus? Again, according to recent authorities, *e. g.* Peaslee, Wells, Simpson, Thomas, and Atlee, large cysts of the broad ligament are not at all uncommon, and have frequently been mistaken for ovarian cysts, than which they are proven to be much more curable by tapping. *Histoid tumours*, as Thomas terms those with dermoid, bony or pilous contents, have been found in many other parts of the body besides the ovary, and why not in the broad ligament? Another question of great interest is as to the source of the menstrual blood, some of which escaped at four successive periods from the wound. The uterine stump of the Fallopian tube being occluded in the pedicle by the ligature no blood could escape *from it*, but it must have exuded from the ovary itself, which was left behind, or else from some neighbouring surface. If I were again to meet with such a case I think I should remove the ovary, or dissect off and spare both tube and ovary as I at first thought of doing in this case.

There has been no hematocele thus far.

ART. VIII.—*On Certain Points connected with the Pathology and Treatment of Abscess in Bone.* By GEO. C. BLACKMAN, M.D., Professor of Surgery in the Medical College of Ohio, etc.

HAVING of late had occasion to treat some very interesting cases of abscess in bone, we have been led to examine such writings on the subject as we could gain access to, and have become satisfied that, in certain respects, inaccurate opinions are widely entertained, both in reference to its pathology and the history of the treatment now generally adopted by intelligent surgeons. Prominent authorities have asserted that there are two distinct varieties of abscess in bone, which differ materially in their progress, and which require different operative measures for their relief. For example, Mr. Charles Hawkins, in his edition of *The Works of Sir Benjamin Collins Brodie*, London, 1865, vol. ii. p. 318, thus refers to that form of the disease described by Mr. Hey of Leeds, and which he pronounces a different affection from that described by Sir Benjamin Brodie:—

"The late Mr. Hey, in his *Practical Observations on Surgery*, has given the history of several cases in which he applied the trephine to the tibia affected with caries. But their cases were very different from those which form the subject of the present chapter (Chronic Abscess of Tibia), there having been not a defined abscess in the centre of the bone, but an external sore, with thickened periosteum, and an aperture in the bone, through which a probe could be passed into the internal cavity."

Mr. Stanley, in his *Treatise on Diseases of the Bones*, Phila. edition, 1849, p. 62, remarks that circumscribed abscess is rarely followed by the formation of a fistulous channel in the walls of the bone and adjacent soft parts, ... but in caries, and in internal necrosis, such a channel is almost invariably formed in the walls of the bone and their investing soft parts; and yet at page 48, when describing the symptoms of circumscribed abscess in bone, he observes that:—

"In some cases a narrow passage has formed in the osseous wall of the abscess, through which the matter has escaped from the interior of the bone. . . . . I have known several instances of destruction of the knee-joint consequent on the escape of matter into it," of course through the "walls of the bone and their investing soft parts."

In his lectures on the *Diseases of the Bones and Joints*, published in the *London Lancet*, Nov. 1843, p. 284, in describing abscesses of the tibia, Mr. Liston thus remarks:—

"Now and then there is slight necrosis, together with abscess, and you will find a few loose portions of dead bone lying in the pus, and, as it were, macerating in it. These may be scooped out easily when the cavity is first opened by the trephine."

In a Clinical Lecture on some Diseases of Bone requiring the use of the Trephine, published in the *London Lancet*, July 12, 1856, Mr. Erichsen reports, among other cases, one in which he trephined the tibia just above the ankle-joint, and which he pronounces "a typical case" of a chronic abscess of a long bone. He states that after removing a circular piece of bone with the trephine, some dark-coloured fluid escaped, when it was found that a cavity had been opened which contained thick pus, "and around its walls was a layer of black carious bone; this I gouged out." The cavity was then stuffed with lint, and allowed to granulate from the bottom. A perfect cure was the result. This was a typical case. Here we had a chronic swelling of the articular end of a bone, attended with intermittent pain; we cut down, apply the trephine, open into a cavity filled with pus and *carious* bone (italics our own), clear it out and allow it to fill up with granulations, and a perfect cure results on the cicatrization of the wound. We might quote others to the same effect, but this we deem unnecessary.

Sir Wm. Fergusson, in his *Practical Surgery*, fourth edition, London, 1857, p. 449, thus alludes to this subject:—

"In disease of the tibia, these partial operations are frequently performed and with much benefit. I have not in my own practice met with many instances of swelling in this bone, where I thought it requisite to perforate the shell with a trephine or other cutting instrument to permit the escape of matter, but I have frequently seen examples where abscesses have burst spontaneously, and left so much disease behind as to render a free opening absolutely necessary; and collections of matter in or about the periosteum, involving portions of the surface of the bone in caries, are so common in practice that little need be said regarding them here. In some instances, too, ulcers of the skin extend to the osseous texture, and cannot be cured without removal of the exposed part. In the two latter examples the most casual observer, who is acquainted with the nature of diseases of the bones, will speedily perceive the cause which obstructs the cure; but in other instances he may possibly overlook the real nature of the deep-seated affection; for often in such cases the matter makes its way from the interior through such a narrow orifice, that the probe does not readily pass into it, and unless the surgeon has some suspicion of the real nature of the disease, he may actually overlook the presence of extensive caries or necrosis of the cancellated structure. It has often appeared to me, that the value of the cases of this kind related by Mr. Hey, has never been sufficiently appreciated by the generality of practitioners. I have myself met with various instances of the sort, and have experienced the most happy results from pursuing a practice similar to that recommended by this most valuable authority."

In a most valuable paper published by Dr. Markoe, in the *New York Journal of Medicine*, May, 1858, On Chronic Sinuous Abscess of Bone, he observes:—

"His" (Sir Benjamin's) "account of the disease, however, embraces only that form in which the abscess character is maintained throughout, and in which the suppuration, taking place within the substance of the bone, is there pent up, by the dense unyielding nature of the surrounding tissues, and in its slow and painful progress towards the surface, gives rise to the distressing symptoms he so well delineates, and is instantly relieved by the simple operation he recommends." Dr. Markoe then proceeds to describe a class of cases "distressing, tedious, and intractable," presenting not so much the characters of the primary disease, as of its effects. "I refer to cases in which the inflammation of the bone begins as an acute attack, passing rapidly into suppuration, and in which the abscess thus rapidly formed, finds its way early to the surface, through the compact external shell of the bone, and is discharged to the temporary relief of the sufferings of the patient, though it may be not greatly to his advancement towards a cure. From this point begins the marked difference in the progress of those cases which Mr. Brodie describes, and those to which I wish to direct attention. In the former, the abscess, once well open, goes on rapidly towards a cure. In the latter, the opening not being free, and probably not being direct, accumulations of matter take place within the cavity, and new inflammations and suppurations are excited in the bone substance surrounding the original focus of disease. . . . . After a time, varying in different individuals from a few weeks to many months, the disposition to the formation of new abscesses seems to cease, perhaps because all the cancellated tissue of the affected region has become involved either

in suppuration or in hypertrophic induration; and the bone is left perforated in all directions by two, three, four, or more sinuses, generally all communicating with one another, and with a central excavation or chamber, which marks the position of the original abscess. . . . . We have, in such cases, an opportunity to learn the natural history of the affection, and may appreciate the amount of its tendency towards a cure, a tendency which existing fifteen years in one of my patients, and about sixteen years in another, had not sufficed, at the time of the operation, to leave any evidences of reparation, much less of cure."

Let us inquire how far the cases reported by Sir Benjamin Brodie corroborate the assertions of Mr. Charles Hawkins and Dr. Markoe. Mr. Hawkins seems to have overlooked the fact recorded on the fourth page (314), preceding his note, on which are reported the full details of the case in which Sir Benjamin performed his first operation, Feb. 1826, for dividing the thickened periosteum; the same case in which he trephined—for the first time—March, 1828. We quote such particulars as bear upon the point in question (p. 313):—

"Mr. B., at the time twenty-three years of age, consulted me in the beginning of February 1826. There was considerable enlargement of the right tibia, beginning immediately below the knee, and extending downwards, so as to occupy about one-third of the length of the bone. Mr. B. complained of excessive pains, which disturbed his rest at night, and some parts of the enlarged bone were tender to the touch. The knee itself was not swollen, and its motions were perfect. . . . . Having inquired into the circumstances of the case, I was led to regard it as one of chronic periostitis; and I adopted the following method of treatment: An incision was made longitudinally on the anterior and inner part of the tibia, extending from the knee four inches downwards, and penetrating through the periosteum into the substance of the bone. *The periosteum was found considerably thickened, and the new bone which was found beneath, was soft and vascular.*"

From the further history of the case it appears that the patient experienced immediate relief, and for some time it was "supposed that a perfect cure had been accomplished," but in August the pain returned, and at length became so severe that he was trephined in March, 1828. It is stated that, even after the incision through the thickened periosteum, "the enlargement of the upper extremity of the tibia, however, never entirely subsided," and in January, 1828, it was "as great as when I was first consulted." True, at the last operation, "the periosteum now was not in the same state as at the time of the former operation; it was scarcely thicker than natural, and the bone beneath was hard and compact." This altered condition of the periosteum was, of course, due to the incision made in February of the previous year; but we have the fact distinctly stated by Sir Benjamin himself, that this thickened periosteum was an accompaniment of the expansion, "the slight enlargement and pain in the upper extremity of the tibia," which had begun more than ten years before. It is also proved by his own report of this case, that he failed to

recognize, at first, the whole nature of the disease, notwithstanding his examination of the limb he amputated in October, 1824, with fatal results.[1] Again, Sir Benjamin informs us, p. 313, *op. cit.*, that, on examining the amputated limb, it was found that a quantity of new bone had been deposited on the surface of the lower extremity of the tibia—the seat of the abscess—and that "this disposition of new bone was manifestly the result of inflammation of the periosteum at some former period." And in his chapter On Chronic Abscess of Tibia, vol. iii. p. 411, he gives us the details of cases, showing the results, in certain instances, of not resorting to the trephine, and the disease is permitted to progress. He attended a patient labouring under various diseases: tubercles in the lungs, dead bone in the ribs, and there was an enlargement of the lower end of the tibia, attended with excessive pain. "By and by, an abscess appeared externally, in the neighbourhood of the enlarged tibia, and then the pain ceased." The patient at length died, and in describing the appearance of the diseased tibia, in the centre of which was an abscess, he continues: "And if you examine the preparation, you will perceive on one side of the tibia a round aperture, by which the matter escaped, and by which the external and internal abscesses communicated with each other. It is plain from this, that such an abscess cannot exist forever without the joint being endangered." But if anything more were needed to prove that even Sir Benjamin himself did not intend to restrict the meaning of the term *chronic abscess* of the tibia to cases like that in which he amputated the leg in October, 1824, and in which there was "a small cavity with a smooth inner surface," we need only refer to the two cases detailed on pages 411 and 412.

"The first of these, a young man, had just returned from Paris, where he had been attended by Baron Dupuytren for an attack 'of inflammation of the bone and periosteum of the tibia.' The inflammation terminated in necrosis. I removed some portions of dead bone; others exfoliated without any operation; and for three or four years pieces of bone continued to come away, none of large size. Among the sinuses that were open, there was one a little below the knee-joint; I could not ascertain whether bone

[1] This patient died on the fifth day after operation, as did the one on whom Mr. Benjamin Travers amputated for chronic abscess of tibia, in December, 1824. (Travers *on Constitutional Irritation*, London, 1827, p. 104, vol. i.) In Sir Benjamin's case, there was a morbid condition of the bone, as thus described and illustrated with a wood-cut by Mr. Henry Lee, in his *Pathological and Surgical Observations*, London, 1854, p. 49:—

"The lower extremity of the tibia was found to be enlarged, and its surface presented marks of great vascularity. Just above the articulating surface there was a cavity in the centre of the bone as large as a chestnut, and filled with dark-coloured pus. This cavity was smooth internally, and the bone surrounding it was much injected and harder than natural."

Had there not been in this case either caries, or central molecular necrosis, if it be deemed proper to make such a distinction?—G. C. B.

had come from it or not, but it closed, and the patient appeared quite well. In the year 1835 or 1836, however, I was consulted by him again, on account of some pain in the upper end of the tibia. Whenever he walked, the knee-joint swelled, becoming full of liquid. I applied leathern splints, kept him quiet, and he seemed to recover. I then left off the splints, and allowed him to walk as usual. The result was, that in the course of two or three days the knee was again filled with synovia. On a blister being applied, the fluid was again absorbed, but reappeared again on exercise. Taking these circumstances into account, and remembering that there had been pain for some time in the upper end of the tibia, and formerly a sinus leading to the centre of the bone, I thought it very probable that the knee-joint was only secondarily affected, in consequence of some disease in the neighbouring portion of the tibia. Mr. Keate and Mr. Liston saw the patient with me, and agreed in the opinion that it would be prudent to perforate the head of the tibia with a trephine. Finding as well as I could the most tender spot, I performed the operation, and out gushed three or four drachms of matter." The operation was performed in 1837, and the patient was cured.

The next case described by Sir Benjamin is one in which there was an enlargement of the upper end of the tibia, and an opening leading down to the centre of the bone, so that a probe introduced into it came in contact with a piece of bone that appeared to be dead and loose:—

"It was plain that a piece of bone in the centre of the tibia had exfoliated and formed an abscess which had afterwards made its way externally. . . . . I applied a trephine so as to enlarge the opening through which the probe had passed. It penetrated into a cavity in which there lay a piece of dead bone, about the size of a horse-bean, which was at once removed."

This patient died of erysipelas, and on examining the limb it was found that the cavity from which the dead bone had been extracted was of the size of a large cherry, having a smooth internal surface.

In a short paper in the second volume, p. 316, of Mr. Hawkins' edition of his works, Sir Benjamin states that he has had the satisfaction of having in his practice preserved six limbs by the operation of trephining, which must otherwise have been doomed to amputation, and we have seen in some of these that there was the complication of thickened periosteum, caries, or necrosis, and in some a sinus leading from the surface to the abscess in the centre of the bone. The following extract from p. 318 of the volume just quoted shows conclusively that he imitated the practice of Mr. Bromfield, Mr. Hey, and Drs. Nathan Smith and Simons of our country:—

"Sometimes," he says, "when I have taken out a portion of the bone by means of the trephine, I have found it expedient to make use of a common elevator to complete the operation, by breaking down the immediate boundary of the abscess; but I have never yet had occasion to make a second application of the trephine."

Here we have conclusive evidence that Sir Benjamin had found it "expedient" to do something more than to perform "the simple operation"—

trephining—which Dr. Markoe has stated is sufficient to "instantly relieve" such cases as the former has described, but which he justly contends must prove insufficient in many of those which form the subject of his paper in the journal already quoted. Dr. Markoe there speaks of the necessity of removing "the entire covering of the suppurating cavity;" in other words, as described by Sir Benjamin, "to break down the immediate boundary of the abscess."

In reviewing the history of similar operative proceedings, we shall find that the affection, as described both by Sir Benjamin Brodie and Dr. Markoe, was fully recognized and successfully treated long before the publications of these distinguished surgeons. Sir William Fergusson, in his valuable Lectures on the Progress of Anatomy and Surgery during the Present Century (*Lancet*, June, 1864), thus proclaims the common sentiment of the profession as to the claims of Sir Benjamin Brodie:—

"Even now I know of no instance better illustrative of the subject than that which I described in the paper alluded to (*London Medical Times and Gazette*, January, 1852), 'Conservative Surgery.' The memorable instance in which he amputated a leg for incurable pain in the tibia, is one of the beacon lights of surgery never to be forgotten. It was, if I mistake not, the model case on which all our modern ideas about abscess of bone are founded, and the pathological examination of that limb led to a line of practice of inestimable value, which, even at the present day, is, I imagine, scarcely appreciated at its full worth. . . . . The example has been followed again and again, with great advantage, and I repeat that I know not, even now, a better illustration of conservatism in the whole range of practical surgery. The operation was scarcely known when I began the profession, and I confess that it was not until I had been many years in practice that I appreciated its value, and, in particular, saw to what it was in a manner the key."

Let us now inquire how far the records of surgery corroborate the above assertions of Sir William, in an historical point of view, and the common sentiment of the profession. In the *Medical Essays and Observations*, revised and published by a Society in Edinburgh, ed. 1742, is an Essay on the Caries of Bones, by Alexander Monro, P. A., in which he gives an analysis of the views of different writers, from Hippocrates and Celsus to Petit, and lastly, considers "What Method of Cure appears most reasonable, according to the Various Circumstances." After alluding to several who had applied the "rasping, chiselling, or trepanning" instruments, for the purpose of removing the caries and giving exit to matter, he thus speaks of the "Worm-eaten Caries or Ulcer of Bone:"—

"The cells formed in the eroded bone in this species of caries lodging and retaining the acrid putrid sanies, which increases the disease, it is necessary to destroy all the affected part of the bone as soon as can be conveniently done. Wherever the proper instruments can be applied, rasping, chiselling, or trepanning, according to the depth or extent of the caries, will most speedily answer the intention. After any of these operations are performed, the method of cure is the same as was proposed when

we supposed these operations to have been performed in the dry caries. When the sanies comes from the cancelli of the bones, the corrupted sides ought to be taken out by one or more applications of the trepan. When, by the orifice through the sides of the bone being in the lower part of the putrid cancelli, the matter easily flows out, or all the affected cavity can be filled with proper dressings, the cure may be made without taking any more off the solid sides of the bone. When the sanies stagnates, because of the unfavourable situation of the aperture in the sides of the bone,[1] one or more new openings must be made with the trepan, till either the sanies has a free exit, or all the part of the bone covering the putrid cancelli is taken away, when the common cures for other ulcers are to be employed."

The *Chirurgical Observations* of William Bromfield, Surgeon to Her Majesty and to St. George's Hospital, was published in London in 1773. In his remarks, in the second volume, on the Diseases of the Bones, he describes the *abscessus in medulla*, and its treatment. At page 7, he observes:—

"The spina ventosa and abscessus medulla occasion a caries in the internal part of the bone first, and is brought on from dyscrasy, or bad habit of body; nevertheless, as we are convinced that the secretory vessels terminate in the medullary cysts, it follows, that any contusion of the principal trunks of the secretory vessels, passing by the periosteum to the receptacles of the marrow, will communicate inflammation, when obstructed, and produce an abscess within the bone, from an external cause."

Again, at page 19, he remarks: "Authors seem not to agree as to the technical term for this kind of disease of the bones; some calling it cancer, or gangræna ossis; others, spina ventosa, from the pointed extuberances usually attendant on this disorder of the bone; and some again, teredo, from the appearance of the carious bone, like wood that is worm-eaten. . . . . Whenever, then, a patient complains of a dull, heavy pain, deeply situated in the bone, possibly consequent to a violent blow received on the part some time before, and though at the time the patient complains of this uneasiness within the bone, the integuments shall appear perfectly sound, and the bone itself not in the least injured, we have great reason to suspect an abscessus in the medulla."

Mr. Bromfield goes on to state that children of a bad habit of body, though they have not suffered any external injury, will often become lame, and complain of the limb being remarkably heavy; "and though not attended with acute pain, yet the dull, throbbing uneasiness is constant. . . . . On the age of the patient, and the solidity of the bone, will in a great measure depend the next alarming symptoms, to those who are not thoroughly acquainted with the case." . . . . The good women, he says, as they cannot see anything wrong, determine it a *growing pain*, as they call it; "but soon after, the extremities of the bone formerly complained of, begin to swell, or possibly throughout its whole extent it becomes enlarged; a surgeon is then sent for, who, if a man of experience, will know this to be an abscessus in medulla, or true spina ventosa, as it is called.

[1] The sinuous abscess of Dr. Markoe is certainly here alluded to, and its proper treatment indicated.—G. C. B.

. . . . This matter at length having made its way through, arrives at the periosteum, where it creates most violent pain; as well from its sharpness, as from its increased quantity, occasioning an extension of the membrane, which I declare inelastic. The integuments then become swelled and inflamed, and have a sort of emphysematous feel. On being examined, by pressure, the tumour will sometimes be lessened, from part of the matter retiring into the bone: from this appearance to the touch, most likely the name of ventosa was added to the term spina. When we are assured of matter being under the periosteum, we cannot be too early in letting it out, as it will save a considerable deal of pain to the patient, though probably it may not be of any considerable advantage in respect to the carious bone. . . . . If proper medicines are given, the children well supported, and the parts kept clean and dry, patience and perseverance will frequently give great credit to the surgeon. And from my dislike to amputate, where the disorder is not merely local, I have had my proportion of honor in perfecting a surprising cure, without any farther pretensions to superior skill than what I have just related. In case it should have been thought advisable to apply the head of a trephine at the upper and lower extremities of the tibia, to give free discharge to the matter, the washing it away, as well as the small crumblings of the carious bone, by means of detersive and drying injections, I have known to be greatly contributory to the curing this kind of caries, after the habit of body in general has been mended."

We have already seen that in some of the cases reported by Sir Benjamin Brodie and Sir William Fergusson, the same "narrow, ill-placed, and often tortuous canals" existed which have been so well described by Dr. Markoe. Indeed, we have only to turn to the excellent work of Mr. Hey, of Leeds, *Practical Observations in Surgery*, 3d ed., London, 1814, pp. 26, 37, to find an admirable sketch of this sinuous abscess of bone. Take, for example, the case of the young lady from Richmond in Yorkshire, who consulted Mr. Hey, in 1786, on account of a small tumour in the anterior and middle part of the tibia. This tumour became larger and softer in the summer of 1787, and was opened by Mr. Hey. He says:—

"I found the periosteum diseased and thickened, separated from the tibia, and including a small quantity of purulent matter. The surface of the tibia was rough as far as the matter had covered it; and in the centre of the rough part there was a hole equal in bore to a goose's quill, which penetrated the bore transversely about a quarter of an inch. . . . I made an examination with a bent probe, and discovered a longitudinal cavity connected with the transverse one, and running both upwards and downwards in the longitudinal direction of the bone. It was now clear that the bone was affected with an internal caries; but it was impossible to ascertain the extent of the caries by such an examination. Nothing now remained to be done, which could afford a rational hope of curing this disease, except an amputation of the limb, or an attempt to explore fully the extent of the internal caries, and to remove the diseased part of the bone. I explained the case fully to my patient, who submitted entirely to my judgment the means to be used for her recovery. She had apparently a good constitution, and excepting the caries of the bone, was in perfect health. I determined, therefore, to avoid, if it were possible, disfiguring

my patient by an amputation. I was satisfied that she would not reproach me on account of my ineffectual endeavours to preserve her limb if my attempt to remove the diseased part of the bone should prove unsuccessful. I began the operation by dissecting off the granulations of flesh which had arisen from the bone, and then sawed out, by means of a circular headed saw, a wedge of the tibia two inches in length, which I had previously marked at each extremity of the longitudinal cavity in the bone. This wedge was half an inch in breadth, and a quarter of an inch in thickness, and consisted entirely of the laminated part of the bone. The removal of this portion of the tibia brought to view a caries of the cancelli almost as extensive as the length of the piece which I had sawed out. With different trephines, suited to the breadth of the caries, I removed the diseased cancelli of the bone quite through to the opposite lamella; as this part of the bone was carious throughout its whole thickness. As the caries extended itself in various directions, it was not possible to remove the whole of it with a trephine without removing also a large portion of the sound part of the bone; but this I wished to avoid as much as possible. By the assistance, therefore, of a strong, sharp-pointed knife, I pursued the caries in every direction, until I had removed every part which had an unsound appearance."

The patient made a complete recovery, and in his remarks upon this case Mr. Hey observes:—

"Upon a review of this case, I am inclined to think that an abscess was formed within the tibia, in consequence of the fever which she had in May, 1786. During the continuance of the fever she had no particular pain in her leg, but upon the decline of the fever the pain commenced, and continued violent for six weeks. It seems most probable that during this time the matter was making its way through the anterior lamella of the tibia, and that the pain abated soon after the matter had perforated the bone; for it ceased immediately upon the appearance of a tumour on the shin. *It is surprising that such a perforation should have been made through so firm a part of the bone without any extensive caries in the lamella* (italics our own), especially as the lamellated part of the tibia was remarkably firm and thick. The perforation appeared as if it had been made with a gimlet. The pain was so great during this operation of nature that my patient assured me, and that immediately after the removal of the carious part of the bone, that she had suffered more pain during the whole of the six weeks above mentioned, unless she was asleep, than I had caused during the operation necessary for removing the unsound bone."

Dr. Markoe speaks of the walls of these abscesses being in places "rough or granular to the feel, giving the impression of an ulcerated or carious condition of the surrounding bone tissue," and which doubtless led Mr. Hey to believe that, with his strong sharp-pointed knife, he was pursuing the caries in every direction, and to apply to this disease the name of Internal Caries. Dr. Markoe, with other writers, describes a rough, irregular, granulated appearance, met with on the surface of the hypertrophied portions of bone, when stripped of their periosteum, due to the chronic inflammation and thickening of the periosteum, with osseous deposits from the inner surface of this membrane, "being," says Dr. M.,

"in all respects similar to the surface of the involucrum in cases of necrosis." This it was, undoubtedly, which Mr. Hey removed with "sharp gouges" in his second patient after he had trephined the abscess in the tibia. He says, "The lamellated part of the bone, surrounding the hole out of which the matter chiefly issued, was in this case carious, but the disease did not run deep into the cancelli of the bone. Above and below this central part the caries seemed to be entirely confined to the lamella, and extended in the whole about six inches."

In his third case it was shown by its subsequent history that too little of the bone had been removed, and he was obliged to perform a second operation, and now "I was determined to leave no morbid part concealed. I laid open, by two applications of the trephine, all that part which I had left hollow at the former operation, and then, partly by sawing off the edges of the lamella, and partly by removing them with chisels, I reduced the depth of the cavity, and exposed every part of it to view. The cavity in the tibia, after this second operation, was four inches in length and an inch and a half in breadth, and no portion of bone remained that had the least appearance of disease." In the course of eighteen weeks the cavity had filled with healthy granulations, and the patient was cured.

In the *Compendium de Chirurgie Pratique*, of A. Bérard, C. Denonvilliers, and L. Gosselin, Paris, 1851, vol. ii. pp. 281, 282, we find, under the head of *Abcès des Os*, a special notice of a paper written by M. Morven Smith, "On the Incision of the Periosteum and the Trephining of Bone in Certain Purulent Inflammations constituting the First Stage of Necrosis." It is stated that an analysis of the above paper appeared in the *Archives Générales de Médecine*, Feb. 1839. The four cases detailed in the above paper occurred in infants or young children, and the abscess was seated in the tibia. We translate from the *Compendium* the following observations upon the treatment adopted by Dr. Smith:—

"The heroic measure proposed by the American surgeon consists in trephining the bone. He states that he had witnessed the success of this practice in the hands of his father, and that he has himself resorted to it in four cases with success. He proceeds as follows: As soon as a painful point is felt, or an obscure and deep-seated fluctuation, he believes that the periosteum is already detached by the extra-osseous pus. This part of the bone is exposed by a longitudinal incision extending as far as the periosteum is elevated. If raised to but a limited extent, he applies but one crown of the trephine; if to a greater extent, he applies the trephine at each extremity of the incision through the soft parts. In this manner the walls of the medullary canal are perforated, and that the cavity is reached is known by the escape of the pus. Dr. Smith has repeated this operation on the same subject and upon the same bone. Scarcely is the medullary canal opened when the agonizing pain ceases as by enchantment, and the constitutional irritation subsides. Such a prompt and happy result is not surprising, as the matter was imprisoned within unyielding walls, pressing upon the medullary membrane, which had become exceedingly sensitive in

consequence of the inflammation, and when the pus finds an exit the whole condition of the patient is changed. The ulterior consequences of this operation are not less fortunate, for the death of the bone, otherwise inevitable, is prevented. In a few weeks the wounds are healed, and the patient is completely restored to health. Notwithstanding the facts detailed in the above paper, many surgeons will hesitate before they trephine a bone, which they find covered on its surface with pus, fearing that they might not find an abscess within, or that they may give rise to the very conditions which they propose to remove. We must leave this question, therefore, undecided, and wait until time and further observations shall aid in its solution."

Dr. Nathan Smith's paper on "Necrosis" was first published in the *Philadelphia Monthly Journal of Medicine* for June and July, 1827. This journal was edited by his son, Dr. Nathan R. Smith, the distinguished Professor of Surgery in the University of Maryland. After the death of his father, Dr. Nathan R. Smith edited the *Medical and Surgical Memoirs*, by Nathan Smith, M. D., published in Baltimore in 1831. In this may be found the paper on Necrosis to which we have alluded. Referring to the acute inflammation which precedes the death of the bone, at page 98, he thus remarks: "When the shafts of the long bones are the seats of the disease, about the same time that matter is deposited beneath the external periosteum, there is formed a corresponding collection between the internal surface of the bone and the membrane surrounding the medullary surface, so that there exist two collections of matter bathing the opposite sides of the walls of the bone. This fact, which I deem of great importance, as being essential to the correct treatment of the disease, I have ascertained in repeated instances, by the operation which I have performed for its relief, namely, the trepanning of the bone." Dr. Smith adds that when this kind of inflammation attacks the long bones, the matter within the bone "is lodged between the medullary substance and the walls of the bone, the medullary substance not being affected nor penetrated by the matter. . . . When the disease has arrived at that period at which the matter accumulated beneath the periosteum has made its way to the surface, and that contained within the cavity of the bone has issued through a fissure, the same relieving the parts from the irritation of distension and pressure, the sympathetic fever in a great degree ceases. . . . My own experience would determine the tibia to be the most frequent seat of the disease; next to this the femur, and then the humerus." At page 109, he gives the details of the case of a coloured girl, nine years old, on whom he operated in 1798, a case, he remarks, page 111, which established in his mind the pathology of the disease, and the proper mode of treating it, that is, when the disease has advanced so far as to form matter.

"For this purpose I used the round saw employed in operating on the skull, applying it to the outside of the femur, nearly in the centre of the denuded part, and sawed through the walls of the bone down to the me-

dullary substance, and then removed the piece circumscribed by the saw, which exposed to view a portion of the medullary substance, in extent equal to the diameter of the saw. On sponging out the blood, the medullary substance appeared healthy and was firm to the touch, but on looking attentively at it, I perceived purulent matter issuing, by pulsations, from beneath the sawed edges of the bone, and between the bone and medullary substance. I repeatedly wiped it away, and it continued to gradually issue. The walls of the bone being fixed, the matter was not forced out by their collapse as it is in the soft parts," etc.

The *Carolina Journal of Medicine, Science, and Agriculture* (Charleston, S. C.), for January, 1825, conducted by Thomas Y. Simons, M. D., and William Michel, M. D., contains a report of a number of interesting cases of necrosis and of abscess of bone treated by Benjamin B. Simons, M. D., a prominent surgeon of South Carolina. We omit the cases of necrosis, but give in full the seven in which Dr. Simons had trephined for abscess of bone:—

CASE I.—Joe, the property of Dr. Richardson, had an ulcer on the tibia, which would heal to a certain point and then break out again. This had continued for some time when he was brought to me for surgical aid. On examination I found the bone considerably enlarged and tumefied. I introduced a probe, and it passed into the cylinder of the bone. An operation was determined on. An incision was made along the tibia on its anterior portion. The integuments were dissected back, and three circles removed with the trephine. The intervening space of the circles, and the diseased portions of the cancellated structure were likewise removed with the chisel, which much facilitated the operation. His wound was dressed with dry lint, exfoliations took place, healthy granulations ensued, and a reproduction of osseous substance. In a few months he recovered.

CASE II.—A negro man, the property of Mr. Fowler, was brought to me with an obstinate ulcer of the tibia, which had been of long standing, and resisted all remedies; the cause of it was not mentioned. The bone was very much enlarged and painful, but on introducing the probe I could find no opening to the medulla. From the enlargement and pain, and obstinacy in healing, I judged it a case of medullary abscess. The trephine was applied, the circle removed, and a considerable quantity of matter escaped; several portions of diseased cancella were removed with the chisel. The wound was dressed with dry lint. Several exfoliations took place, and in a few months he recovered the use of his limb, and was dismissed cured.

CASE III.—A gentleman who from previous sickness had ulcers which broke out on his left tibia, and which had resisted all the remedies applied, determined to go to Paris for relief. He went there, and placed himself under a distinguished surgeon. Various remedies were applied, and setons continued. From this he received no positive benefit.

He returned to his native country unrelieved. In this state he called on me. I examined the wound, and told him distinctly there was a disease of the medulla of the bone, and that he would never get well unless he submitted to an operation. He consented. I applied the trephine, extracted several circles of bone, and let the matter escape. Several exfoliations took place from the inner cavity of the cylinder of the tibia. The wound was dressed in the usual manner, and the gentleman is now in the enjoyment of excellent health.

CASE IV.—Boston, the property of Colonel Pinckney, was sent to me with an obstinate ulcer of the lower extremity of the tibia, which would heal up to a certain point, and then break out again. This had continued for some time, the bone was enlarged and painful, and on introducing the probe it entered the cylinder of the bone. I took away two circles with the trephine, and removed

with the chisel several portions of diseased cancellæ. The wound was dressed with dry lint, and after several months he recovered.

CASE V.—A negro man, the property of Mr. George Edwards, was sent to me with an obstinate ulcer on the superior portion of the tibia, which would heal to a certain point and then break out again. The bone was enlarged and painful. The probe was introduced into the wound and passed into the cylinder of the tibia, one circle was taken away with the trephine, and the matter permitted to escape. Several exfoliations took place during the cure. The wound was dressed as usual, and he recovered.

CASE VI.—Pierce, a negro boy, the property of Mr. William Mathews, was sent to me with an obstinate ulcer of the tibia, which would heal up to a certain point, and then break out again. This continued for some time. The bone was enlarged and painful, and hectic had supervened. The probe, when introduced, passed into the cylinder of the tibia. On its withdrawal matter escaped. Four circles of bone were taken out by the trephine. The intervening space was removed by the chisel, and a considerable quantity of diseased cancellæ likewise removed. During the cure several exfoliations took place. In the course of several months he recovered.

CASE VII.—A negro boy, the property of Mr. John Ball, was sent to me with an obstinate ulcer on his tibia, which had been there for a length of time, and which was produced by striking it against a piece of wood. The ulcer was extensive, and the edges of it callus. The bone was enlarged and painful, and hectic had supervened. The probe was introduced, and it extended to the cylinder of the bone. On its withdrawal matter rushed out. An incision was made along the tibia, the integuments dissected back, and eight circles taken away. The intervening spaces of the circles were removed by the chisel, and a great quantity of diseased cancellæ likewise thus removed. The wound was dressed with dry lint. Several exfoliations took place. This case, from the extensive progress which had been made by the medullary abscess, and consequent destruction of a considerable portion of the bony structure, was a long time in recovery.

It will be observed that this report was published in January, 1825, and was doubtless prepared for publication as early as October, 1824, the period when Sir Benjamin Brodie amputated the leg for abscess of the tibia with a fatal result. Sir Benjamin first trephined the tibia, as we have seen, in March, 1828, more than three years after Dr. Simons' practice had been made known to the profession, both through the Journal already quoted and the *American Medical Recorder* for April, 1826. But prior to both Sir Benjamin and Dr. Simons, Bromfield, of Sir Benjamin's own hospital, St. George's, had described in his work on surgery (1773) the symptoms which should lead the practitioner to suspect the existence of abscess of bone, and had taught that the operation of trephining in such cases should be a substitute for amputation.

ART. IX.—*Stricture of the Urethra; Breaking of a Bougie in the Urethra; Perineal Section, and Median Operation as for Stone, with Extraction of Bougie from the Bladder.* By ERSKINE MASON, M. D., Demonstrator of Anatomy in the College of Physicians and Surgeons, New York; Surgeon to the Charity Hospital, New York, &c.

THE following case appears to me worthy of publication, as illustrating an accident which occasionally occurs in operations about the urethra, and

the readiness with which the greater portion of a bougie was removed through the median or Allarton's section for stone :—

E. C., aged 52, labourer, was admitted into Charity Hospital June 3, 1869, suffering from stricture of the urethra. His history in brief was that of a traumatic stricture, resulting from an injury received in the perineum, five years ago, while in the army. For the past two years he states he has been able to void urine either by a very small stream or in drops only; the latter mode being the only way in which his bladder was relieved at time of admission. His physical condition was wretched, and he complained of an almost constant pain in the lumbar region, want of appetite, and frequent vomiting; which, together with extremely frequent calls to empty the bladder, were fast wearing him out. The urine, upon examination, revealed albumen, a few granular casts, triple phosphates, pus-corpuscles in abundance, together with cystic epithelium. After some days of general treatment, the urethra, which before was so irritable that it was hardly possible to attempt the introduction of bougies, on account of the intense pain which they caused, abated in a measure, so that I was able to pass a filiform instrument through the stricture into the bladder. This method of gradual dilatation was practised until the 21st of June, when I succeeded in passing a No. 3 bougie (French scale) through the stricture, which was situated in the subpubic curvature. Deeming the condition of the patient not such as to warrant the operation of perineal section, I proceeded to divide the stricture with Gouley's modification of Maisonneuve's urethrotome. The patient was accordingly etherized, and the instrument passed over the bougie as the guide. Just as the knife reached the stricture, the bougie (which was of English make) was discovered to have broken. This accident was due either to some flaw in the manufacture of the bougie (which was a new one), or else it had been cut with the knife—which of the two, from an examination of the ruptured bougie, I am unable to state positively, though inclined to the belief that the bougie in some manner became bent in front of the stricture, and was thus divided by the blade of the instrument. Upon removing the anterior portion of the bougie the disagreeable fact became manifest that nearly eight inches of the bougie remained behind, either in the urethra, bladder, or both. I at once passed down the urethra a long thin pair of forceps, with the hope that, perchance, the end of the bougie might be seized, and in this way removed, but without success. Perineal section was accordingly performed, and the stricture, which involved not only the bulbous but a portion of the membranous urethra, was freely divided. No sign of the bougie being discovered in the urethra, I introduced my little finger into the wound in the perineum, and proceeded, as in the median operation, to dilate the urethra and enter the bladder. This being accomplished with the greatest ease, I was pleased to feel the bougie, which was lying crosswise in a thickened and contracted bladder. Seizing it with my little finger in this position was an easy matter, and the bougie was readily withdrawn. The case was treated in the same manner as is usual in cases of section in this hospital, no instrument being left in the bladder, but a full-sized catheter introduced once or twice a day, as the case may be, to draw off the urine. No unpleasant symptom occurred to retard a speedy recovery from the operation and relief from all his previous symptoms. The following note of the case I transcribe from the hospital records :—

"July 8. He complains of pain in the epigastrium, where there can be seen a pulsation, marked dulness on percussion over a circumscribed space

about two and a half inches in diameter. Auscultation reveals a murmur heard with maximum of intensity just to right of the median line. Diagnosis, aortic aneurism. July 20 was transferred to the medical wards. July 23. Patient left the hospital to-day, being unwilling to remain longer, having been relieved from the trouble for which he sought admission."

This case appears to me to go far towards showing the ease with which the median operation can be performed, and how well it is adapted for just such cases as this. There was no subsequent dribbling of urine, as there would have been had either the lateral or bilateral operation been performed; the patient was spared the dangers arising from the urine flowing over a wounded and inflamed prostate, not to refer to the danger in his condition from hemorrhage, he having perfect control over the bladder. Indeed, had any other operation been resorted to than the one adopted, I feel sure that the final result would have been less happy, both to the patient as well as to the operator. In this case I should also state that the patient was suffering at the time of operation from prostatitis, the prostate being considerably enlarged, and extremely painful, upon examination through the rectum.

ART. X.—*Tracheotomy for Removal of a Shawl-pin.* By J. C. REEVE, M. D., of Dayton, Ohio. (With a wood-cut.)

I WAS called out of bed about half past ten o'clock on the 10th of May last, to see a little girl who had "swallowed a shawl-pin." I found the patient to be eight years old and in good health. About an hour before she had been playing with a shawl-pin, which her mother told her to lay down and to go to bed; soon after retiring, perhaps half an hour, she came rushing out of her room, strangling and choking, with the cry that she had swallowed the pin. Her breathing was laboured and embarrassed, and she complained of something "sticking" her about the fauces. I made several efforts to inspect the throat, but without success; these brought on fits of coughing, and she soon said she was better, that it did not "stick" her any more. From the description given me of the pin, it was difficult to believe it had passed into the air-passages, or indeed gone anywhere down the child's throat, yet further examination speedily confirmed the worst apprehensions. Inspection of the chest showed that the left side did not expand upon inspiration; this was so marked that the parents were readily convinced of the fact; the respiratory murmur was entirely absent upon that side; moreover, every few minutes she had severe paroxysms of coughing characteristic of the presence of a foreign body. There could be no doubt that the pin was in the trachea with its head impacted in the left bronchus. As the symptoms were not urgent, I left her for the night, with instructions to send for me immediately if she became worse, believing that the advantage of having daylight for the operation would more than counterbalance the evils of the delay.

I visited her about five o'clock in the morning, with the intention of making a careful examination with the stethoscope, and of preparing for the operation. Immediately upon entering her room, however, I saw that there could be neither doubt as to the nature of the case, nor delay in

treatment. She had passed a bad night, coughing in violent fits frequently, but I was told that the marked difficulty of respiration had only supervened about an hour before. It was now extremely laboured and very noisy, and her face deeply suffused. It needed but a glance to show that an operation was imperative and immediately necessary to save her life. As soon as the requisite preparations could be made, and the assistance of Drs. Jennings, J. W. Stewart, and Shriver procured, it was proceeded with, chloroform being first administered. I aimed to follow Trousseau's directions to "operate slowly, very slowly;" the hemorrhage was very free, as anticipated from the extreme distension of the veins of the neck during the inhalation of chloroform; a small arterial branch spirted, and the veins poured out blood copiously; by sponging with ice-water this was checked, but the intentional delay to allow the bleeding to cease before opening the trachea was much increased by constant coughing, which, added to the laboured respiration, did not give me an opportunity to make the last incision. This cough was short, hacking, and incessant; it began during the administration of chloroform, and was not allayed by the production of full anæsthesia, and I believe that at that time the pin was dislodged and its point driven up against the glottis, the irritation there producing this continuous short cough, so different from the violent paroxysms caused by the presence of the foreign body in the trachea. Knowing that a free incision into the trachea was necessary, I introduced the point of the knife close to the thyroid gland, and in opening the tube must have divided large veins which I had not seen, for a most copious venous hemorrhage poured over the wound and into the air-passages, and her condition immediately became critical. She was rolled on her side, and in clearing away the blood and mucus from the wound my finger came in contact with the shaft of the pin; I had expected to divide it with pliers or scissors, but there was no time for this, and I passed a strong hook around it, guided by the finger, and withdrew it by *bending* it out. No other procedure was possible; the respiration had not only become more embarrassed by the entrance of blood, and by the efforts at extraction, but it had actually ceased; when the pin was removed she had not inspired for some little time, her pulse had ceased, her countenance indicated that she was "gone," as all standing by said. Without a moment's delay I cleared away the blood and mucus and began mouth-to-mouth respiration, closing the wound in the neck with one hand and the nostrils with the other. After this had been continued a short time she drew a single breath, and soon another, and after a little while respiration was fully established. Her pulse soon became perceptible, but was not satisfactory until after an enema of whiskey and water had been administered. A tube was introduced into the wound for fear that the swelling from the injury done to the parts would interfere with respiration, and it was continued most of the time during the following thirty-six hours; she was very much troubled by a copious secretion of extremely tough mucus, and her respiration was such that for forty-eight hours I felt considerable anxiety as to her recovery; by the end of that time, however, she was out of danger and her convalescence was uninterrupted.

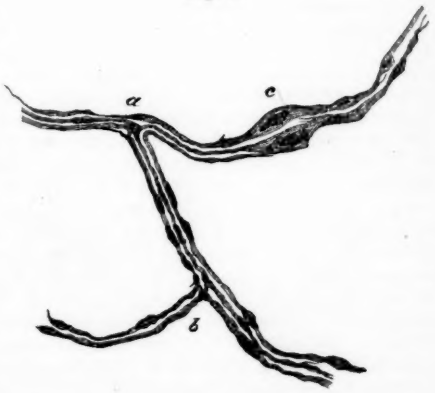
The accompanying illustration gives the exact size of the shawl-pin removed; its length is three and a quarter inches.

ART. XI.—*Note on the Distribution of Nerves to the Vessels of the Connective Tissue in the Hilus of the Pig's Kidney, and on the Ganglia found in Connection with these Nerves.* By JAMES TYSON, M. D., Lecturer on Microscopy at the University of Pennsylvania. (With three woodcuts.) Read before the Biological and Microscopical Section of the Academy of Natural Sciences of Philadelphia, and ordered to be published.

PREMISING that these observations are incomplete, though, I believe, accurate as far as they go, my excuse for bringing them under the notice of the Section at this stage is, that its members may have the opportunity of examining the preparations before they become altered. Having been mounted quite two months, they are still in good keeping, though it is impossible to state how long they will remain thus. The observations, when complete, will also have for their object to determine whether these nerves and ganglia are also distributed to the vessels and tubules in the secreting structure of the kidney, as the labours of Beale appear to have shown; failure to demonstrate this latter point being attributed to want of success in the injecting process—a matter of no inconsiderable difficulty, as the entire organ (that of the young pig) was but an inch in length, and the artery, therefore, exceedingly small. It is hoped that further attempts will accomplish this, though Dr. Beale himself, of whose observations these are a repetition, makes no allusion to having found the nerves upon the tubules and vessels of the pig's kidney, but has demonstrated them most satisfactorily in this portion of the kidney of the frog and newt, as will be learned later.

The preparations were made from the kidney of the new-born pig, which was treated as nearly as possible after the method of Dr. Beale—staining with carmine, washing with dilute glycerine (2 glycerine, 1 water), and finally preserving in acetic acid glycerine (5 drops to oz.). In this latter solution, also, have the preparations been mounted.

Fig. 1.



The appearances can be well traced in the diagrams which I have had prepared (Figs. 1 and 2). In Fig. 1 is shown a bundle of fine nerve fibres, characterized by the presence of germinal matter at different parts, and longitudinally throughout their course, dividing at the points *a* and *b*, and expanding into large ganglion cells at *c*, with each extremity of which a nerve fibre is continuous. Fig. 2 exhibits a finer set of nerve fibres, constituting a network in the vicinity and immediately about the arteriole, easily distinguished, though uninjected, by its

transverse nuclear markings. The filaments here correspond each to a single one of the bundle of three represented in Fig. 1, and exhibit the

Fig. 2.

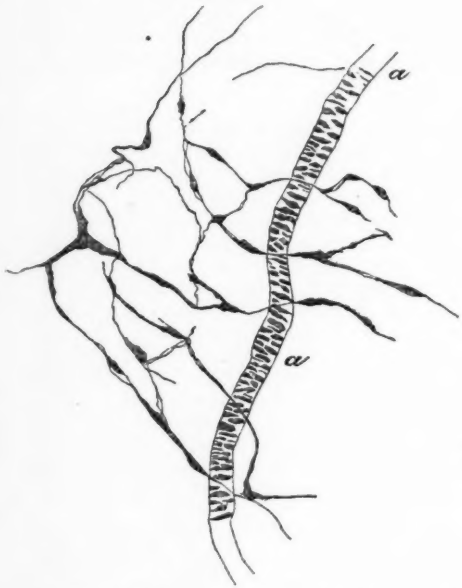


Fig. 3.

same subdivisions now accorded as characteristic of the finer nerve fibres in their ultimate distribution, when they are deprived of the adventitious membranous sheath and white substance of Schwann.

No difficulty will be encountered in distinguishing these bundles of fine nerve fibres as drawn in Fig. 1, from the arteriole and capillary with which it is barely possible they may be confounded. The transverse nuclear markings of the arteriole are at once characteristic, and although capillaries are also characterized by a more or less longitudinal arrangement of their nuclear markings, yet by comparison of Fig. 1 with Fig. 3, it will be seen that they are still different from those of the nerve fibres, being distinguished by an alternate arrangement of the nuclei on the sides of the vessel, while the germinal matter in the nerve fibre occupies its entire thickness, bellying it out, as it were, while the immediate continuation is often even more slender than the body of the nerve fibril at a point midway between two nuclei.

Further evidence that these delicate fibres are fine nerve fibres is seen in the fact of their continuation with the large ganglion cells, and most conclusive proof in the fact that they have been traced by Dr. Beale in continuation with dark bordered nerve fibres, and resulting from the subdivisions of the axis cylinder of these.

No ganglia are represented showing more than two cells, for this reason, that, although cellular collections revealed themselves under low

powers resembling those indicated by Dr. Beale as masses of ganglion cells, yet, as they could not be resolved by high powers into individual bodies exhibiting the characters of ganglion cells, I was unwilling to present them as such. This difficulty may have been due to the intensity of the staining, which was too vivid in the case of many cells, all portions being alike deeply tinged, so that the different parts could not be easily resolved; nor, in aggregations, could the cells themselves be separated. Yet we believe the fact of the existence of the ganglia is no less established, at least until some more satisfactory interpretation is put upon them.

These ganglia and nerves, apparently quite abundant in the connective tissue of the notch of the young pig's kidney, have also been found by Dr. Beale in the kidneys of children. They are, however, more difficult to obtain in the adult human kidney, probably in consequence of the increased amount of formed material which rapidly grows at the expense of the germinal matter, rendering the latter more indistinct and difficult of demonstration with increasing age. This change is readily demonstrable by microscopic examination of the tendon of a child or young animal, in comparison with a corresponding structure of an adult. The former will be found crowded with nuclear or germinal matter, while, in the latter, it will be placed at longer intervals, separated by larger quantities of the fibrous formed material now in excess. Thus is produced a so-called connective tissue in which uninjected capillaries and shrivelled nerve fibre, which have performed their function, together with the more indistinct ganglia and fibres still active, form a part. Hence it is believed by Dr. Beale, that the oval masses of germinal matter seen in the intervals between the tubes, and upon the surface of the vessels of the mammalian kidney, belong to nerve fibres, the structure of which is so delicate, or so much obscured, that it is extremely difficult to trace their course.[1] In the frog and newt, however, he has demonstrated the ganglia, and traced from them the nerves which he has traced to their ultimate distribution around the tubes and capillary vessels of the kidney.[2]

These nerves and ganglia, mainly derived from the sympathetic, in connection with those referred to as described by Dr. Beale in the secreting portion of the kidney, also from the same source, are believed by the latter physiologist to be a part of a system of afferent and efferent nerves, distributed to the capillaries and tubules of the kidney, by means of which so-called nervous influences, as emotions, and it might be added also, in some instances at least, remedies, produce their effect upon the secretion of this organ. The ganglia are considered as bearing the same relation to the kidney that the ganglia, believed by many to be in connection with the cardiac nerves, bear to the heart. The nerves distributed to the walls of the uriniferous tubes, are believed to be *afferent* or sensory, conveying to the centres an impression, the response to which is conveyed by the *efferent* nerves, or those distributed to the capillaries, whereby the latter dilate or contract their calibre. Thus, these nerves regulate the supply of blood to the secreting structure of the kidney, producing on the one hand an abundant and rapid supply, accompanied by a distended vessel and proportionate secretion of watery urine; on the other, a diminished and slower current, and corresponding secretions of urine, probably containing a larger amount of solid ingredients.

[1] Beale, Kidney Diseases and Urinary Deposits, 3d edition, 1869, p. 17.
[2] Ibid., p. 16.

If these views are correct, and they certainly involve no dislocation of the principles of deductive and analogical reasoning, in connection with the recent accepted views of the function of the sympathetic, they become most important not only in explaining physiological and pathological phenomena of the kidney, but also in their relation to therapeutics, while they account most satisfactorily for certain recognized phenomena in the secretion of urine. It would seem that their correctness must rest entirely upon that of the observations. If the facts be correctly observed, it would appear to me that the view is at least a legitimate conclusion, though, in the uncertainty of our science, it may not be the only one.

If, then, so much depends upon the accuracy of observation, it is exceedingly important that other observers should go over them, to confirm if possible, or to deny if need be. To this end, it is hoped, these efforts contribute.

It can scarcely be objected to the conclusions drawn that the facts have not all been demonstrated in a single species; that while the nerves and ganglia have been found in the connective and submucous tissue in the notch of the pig's kidney, and in the same situation in the child, they have not been found in connection with the tubular structure of these kidneys, but in those of the frog and newt. The elements of general physiology, however, show most conclusively that except there be some fundamental difference in function, structural arrangements which hold good in the organs of one animal hold good in the corresponding organ of another. Now, we not only have no such fundamental difference in the function of the kidney of man, the frog, and newt, but the structure, so far as the acknowledged secreting elements are concerned, is almost identical; and the arrangement of the tubules and capillaries in the organs of these lower animals has been of invaluable service in determining the true anatomy of the human kidney. With equal propriety, then, may the arrangement and the distribution of the nerves in the same organs be used to determine more delicate points in the anatomy of the human kidney.

ART. XII.—*Fracture of the Neck of Femur; Treatment by Means of Extension with Weights, applied both in the direction of Axis of Limb, and also Laterally in Axis of Neck; Recovery without Shortening or other Deformity.* By G. W. PHILLIPS, M. D., Dixon, Illinois. (With a wood-cut.)

AUG. 10th, 1867, Mr. S., aged 45, of good constitution, was thrown from a load of hay, striking his left hip upon the hard road. As he lay in bed upon his back the shape of the hip was seen to be altered; region of trochanter flattened, the contour of the hip being fuller on the posterior-superior part. Position of the limb was nearly natural with the exception of the toes pointing directly forwards; shortening of one-half or three-fourths of an inch. Contusion slight. The trochanter, as the patient was not very fleshy, could be easily felt depressed and resting upon the posterior-superior edge of the acetabulum and body of the ischium. The least attempt to move the limb caused great pain. Upon putting him under chloroform, and making extension, the limb was readily brought to

its natural length, a distinct crepitus being heard at that moment. Upon withdrawing the extension, the shortening and unnatural contour of the hip returned, no crepitus being noticed as the limb shortened. By adducting the thigh, and flexing it across the abdomen, making the pelvis a fulcrum on which to depress the femur, then rotating the limb, there was distinct crepitus; this movement was repeated several times, but crepitus was not always heard. During the progress of the case but little swelling occurred. At the termination of the treatment, the entire joint was a little enlarged but uniform.

There was evidently a fracture in the region of the hip-joint, either of the neck of femur; "fracture through the trochanter major and base of the neck of femur," as this form of fracture is called by Hamilton; fracture through the base of acetabulum; or of the rim of acetabulum. As before remarked, the patient, not being fleshy, and there being no swelling from effusion, the hip could be as easily examined as the sound one. No prominence could be felt except the trochanter, as would have been the case if it had been a "fracture through the trochanter major and base of neck of femur."

Dr. Hamilton says, that in cases of "fracture through the base of acetabulum, in which the head of the femur is driven through into the cavity of the pelvis, crepitus is more uniformly present than in fractures of neck of femur; and it is especially felt while the limb is being extended, or while it is again shortening, and not so much in flexion and rotation." In this case, crepitus was not felt until extension was complete, and not felt while the limb was again shortening, and was also felt in flexion combined with rotation.

The evidences of local injury were too slight to have supposed that the base of acetabulum was fractured. In fracture of the rim of the acetabulum, according to Hamilton, the "causes are generally the same as those which produce dislocation of the hip; in most instances the violence has been greater than in the case of dislocation." "The symptoms are first such as indicate a dislocation, to which may be added crepitus and difficulty, if not impossibility, of retaining the head of the femur in its place, when reduced. The crepitus is discovered the moment we begin to move the limb, and this will aid us to distinguish it from fracture of the neck of the femur, accompanied with much displacement; since, in the latter case, the crepitus is not felt, usually, until the extension is complete, and the fragments are again brought in apposition."

As the principal point of interest in this case is the treatment, the question need not be considered as to whether this was a case of intra- or extra-capsular fracture, as the method of treatment is adapted to either form.

In order that the surgeon may intelligently apply mechanical means, so as to bring the surfaces of the fracture in contact, and keep them so, he must clearly understand the direction in which the muscles exert their contractile force.

In fracture of the cervix femoris, one set of muscles arising from the pelvis and lower portion of spine, and inserted into the femoral fragment, and to the leg below the knee, the general direction of which is in the line of the axis of femur, draw this fragment upward and backward, shortening the limb; another set of muscles, also taking their origin from the pelvis, the fibres of which run in the direction of the axis of the neck of femur, and inserted into the great trochanter and upper portion of femur, draw it inwards, thus shortening the neck. In order to bring the surfaces

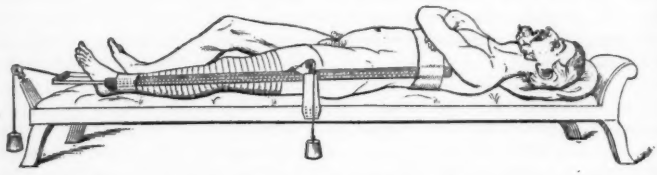
of the fracture in contact, and keep them in place, there are three indications to be fulfilled. First, to restore the limb to its natural length. Second, to restore the cervix to its natural length. Third, to prevent motion of the surfaces of the fracture upon each other.

The first indication was met by employing adhesive plasters, applied to the limb, a cord being attached to a loop, and passed over a pulley, and weight attached. The counter-extension was the weight of the body, increased by elevating the foot of bedstead five inches.

The second indication was accomplished by fastening a broad band, made of thick, firm cloth, around the upper part of the thigh; to this was attached, on the outer side of limb, a cord passing over a pulley in a block fastened to the bed rail, and weight attached. The position of block with pulley was such, that the extending force drew at right angles with the axis of femur outward, and a little upwards, thus restoring the neck of femur to its natural length and position. The counter-extension was, of course, the weight of the body.

The third indication was met by the use of a broad thick splint, extending from the axilla to the sole of the foot. This was fastened to the chest by a broad band, and to the limb by other bands, the splint being thickly padded at upper and lower part, so as not to press upon the trochanter.

The accompanying drawing shows the apparatus as applied. The lateral extension not only restored the neck to its natural length and position,



but, by putting the muscles on the stretch that lie in contact with the joint, served to steady the broken ends of the bones upon each other. That this lateral extension restored the neck to its natural length and position could easily be seen; for, when applied, the trochanter could be felt to move outward, and the natural contour of the hip to become restored; if left off, the trochanter became depressed and hip flattened.

The weight applied to the limb to produce extension for the first three weeks varied from twenty to twenty-five pounds; after that time fifteen pounds were found to be sufficient to keep the limb to its natural length. The weight for the lateral extension was nine pounds. The extension, both in direction of axis of limb, and laterally, was kept up for sixty days, then removed, but patient kept in bed on his back three weeks longer before he was allowed to go upon crutches.

On November 25th, one hundred and seven days since the occurrence of the injury, and twenty-seven since he commenced the use of crutches, I found, by careful measurement, no difference in the length of the limbs, and the distance from the trochanter to the anterior superior spine of ilium to be the same on both sides. Soon after this Mr. S. left for his home in Glasgow, Scotland. I have since learned that, after several months had elapsed, he had obtained a good use of his limb.

ART. XIII.—*Case of Poisoning by Three Grains of Atropia.* By S. W. GROSS, A. M., M. D., Surgeon to the Philadelphia Orthopædic Hospital.

ON the 3d of November, 1868, I was requested by Dr. De Young, of this city, to see his sister, Mrs. H., a stout, healthy woman, forty-three years of age, who was labouring under symptoms of narcotic poisoning. At 8.20 A. M. she had taken, her stomach being empty at the time, four pills compounded from a prescription which he had made some time previously, and of which the following is a true and literal copy:—

℞.—Hydrarg. chlor. mite, ext. rhei, āā ℈ss; asafœt. gr. iij; ft. pil. No. IV. 6. 22. 8.—P. De Young.

Mrs. H. had been in the habit of taking the above pills for the relief of constipation and headache, and had always obtained them from the same drug store. On the morning in question, about twenty minutes after having swallowed the dose, her maid heard herself called twice by some one with a strange, husky voice, and, upon entering the room, found, to her surprise, that she had been called by Mrs. H., who was dropping into an easy chair. Mrs. H. remarked, "Could there have been anything in those pills, I feel so very strangely?" Her maid then placed her upon a lounge, and noticed that her hands were tremulous and her eyes closed; but she was quiet, and becoming drowsy. In a few minutes the agitation increased, until it became violent, she, at the same time, kicking out her feet, and throwing her arms forward. She, however, asked for a glass of water. On attempting to move her to her bed, it was found that her limbs were powerless, and that she was unable to stand, so that she had to be carried. It was now observed that her face was "very much flushed, as if she had been standing over the kitchen fire." In a few moments a meddlesome and pleasant delirium set in, in which she picked at her clothes, tried to get out of bed, and imagined she was sewing, or nursing her child, or engaged in shopping with her sister. These hallucinations lasted for about ten minutes, when she sighed and yawned repeatedly, and "dropped into a comfortable sleep," in which state she remained until the arrival of Dr. De Young, at about 10 o'clock; the interval between the taking of the medicine and the sopor having been rather more than one hour.

Dr. De Young found his sister in a lethargic state, from which she could not be aroused. Her face was flushed; her respiration appeared quiet and natural; and there were, now and then, convulsive movements of the hands and feet. An ordinary purgative injection was at once administered, followed, soon afterwards, by an emetic of mustard and warm water. A messenger was sent to the druggist for a copy of the prescription, and, upon his return, it was found that atropia had been substituted for the assafœtida. Dr. De Young then ordered more mustard, along with syrup of ipecacuanha, which happened to be in the house, and hurried to the drug store to inspect his original prescription. He returned at once, calling for aid on several physicians on his way back, and administered large quantities of emetics, including about five ounces of syrup of ipecacuanha, two ounces of mustard, and one drachm of sulphate of zinc. The enema had produced the desired effect during his absence, but emesis was not excited, although efforts were made in this direction

on the part of the patient. The further administration of drugs by the mouth was prevented by the occurrence of trismus.

11.15 A. M. Dr. Charles Carter, of the Northern Dispensary, arrived. The condition of the patient at this time, about three hours after the poison had been taken, is best shown by an extract from his written statement to me: "I found Mrs. H. unconscious, and labouring under a heavy stupor. The eyes were closed, the pupils dilated, and the muscular system was greatly relaxed, excepting a condition of trismus, which was so well-marked that an emetic was administered with great difficulty, and deglutition was almost impossible. The respiration was laboured, and very much like that of an intoxicated person. The pulse was quite good, but neither this nor the respiration was counted." After the lapse of a few minutes Dr. Lewis came in, and, at the suggestion of Dr. Carter, administered a hypodermic injection of half a grain of acetate of morphia.

11.40 A. M. I arrived in company with Dr. Ralph Townsend and Dr. T. H. Andrews, and found Mrs. H. lying perfectly passive in bed, in a state of profound stupor. The muscular system was thoroughly relaxed, the trismus having passed off. The skin was cool and moist; the pulse was 106, of good volume, and pretty strong. The respiration was 26, and heavy, but without stertor. The countenance was somewhat livid. The lids were closed; the conjunctivæ were slightly injected; the pupils were dilated three-fourths and insensible to light; and the eyes had a fixed and brilliant stare. The tongue, roof of the mouth, and soft palate were glazed and parched. Deglutition was impossible, and attempts to introduce remedies by the mouth were attended with suffocative symptoms. I at once threw under the skin half a grain of sulphate of morphia, and washed out the stomach thoroughly, injecting afterwards whiskey and ammonia largely diluted. The effects of the exhibition of the morphia appeared to be scarcely perceptible contraction of the pupil; reduction of the respiration to 20; the production of slight stertor; no change in the pulse. After the use of the stomach-pump, respiration became very irregular and feeble, and, at times, appeared almost to cease. The pupils regained their unnatural size. Faradaism and artificial respiration were now resorted to, the poles of the battery being applied respectively along the course of the phrenic and pneumogastric nerves, and at the hypogastrium. A third half-grain of morphia was again injected at 12 M. Under these measures, after the lapse of fifteen minutes, the respiration was 14, but very decidedly stertorous; and the pulse was 102, pretty full, but weak. The bad condition of the breathing, indicating as it did increased narcotism, was, in my opinion, a sufficient reason for withholding morphia, and from this time no more was exhibited. The stertor continued for half an hour after the induction of artificial respiration.

2 P. M. Professor Gross now arrived, and suggested flagellation of the trunk and extremities with bundles of willow switches, in addition to the other measures employed. In the interval, artificial respiration and faradaism had been unceasingly kept up, the former having been very materially assisted by slapping the chest and face repeatedly with the hands immersed in ice-water. The mouth was held open by corks, armed with threads to prevent accident, placed between the teeth, and the Marshall Hall method was used. The respiration, at times, was very laboured, and the countenance livid; and whenever the artificial measures were relaxed for a few moments, the breathing threatened to cease entirely, the tongue

showing a disposition to fall back and choke up the superior aperture of the larynx, whence it had to be dislodged by the fingers.

6.30 P. M. Up to the present time there has been no change in the symptoms; but now the respiration is 20 and becoming more natural, and permits of short intervals of rest to myself and fatigued assistants. I drew off fourteen ounces of urine, of which I injected twenty drops into the nape of the neck of the family cat, with the effect of widely dilating its pupils. The bowels were found to have acted, and the extremities being cold were enveloped in hot blankets.

7.45 P. M. Artificial respiration, faradaism, and flagellation stopped. Respiration 18. Pulse 108, weak, and of pretty good volume. Muscular system still greatly relaxed. Pupils unchanged. The patient appears to be in a quiet sleep. Two ounces of whiskey were thrown into the rectum, and small lumps of ice were placed in the mouth, the tongue looking like a piece of sole-leather.

8.45 P. M. Respiration began to increase in frequency until it soon reached 30. Inspiration roughened and expiratory murmur much prolonged. Coarse mucous râles abundant throughout the chest. Veins of the face turgid with blood, and death by apnœa imminent, from exhaustion and accumulation of fluid in the air-passages. The former measures were again vigorously resorted to, and, at the suggestion of Professor Gross, veratria ointment, one drachm to the ounce, was briskly rubbed along the spine and over the chest and epigastrium.

9 P. M. Pulse 128; respiration 28. The muscles respond to a weak galvanic current, and the patient opens her eyes, and makes voluntary and quite strong movements, such as drawing up the lower limbs, rolling her head, and twisting the body violently, in response to the flagellation and veratria frictions.

10 P. M. The patient shows signs of returning consciousness. She exclaimed "O my," and turned voluntarily upon her side. At the expiration of ten minutes she attempted to expectorate, and, on being asked if she would take whiskey, nodded affirmatively, and swallowed four tablespoonfuls of equal parts of that fluid and water. The veratria ointment was now discontinued, and Chapman's ice-bag was placed along the spine.

11 P. M. Artificial respiration has been kept up at intervals, and the ice-bag was used about twenty minutes. On being asked how she felt, she replied "Better," and on being slapped, she said, "You hurt me." She now swallowed one tablespoonful of strong beef extract, and a few moments later, she took another with difficulty.

11.10 P. M. Symptoms of suffocation suddenly set in, and notwithstanding an immediate and vigorous resort to the former measures, continued briskly for nearly half an hour, resuscitation was impossible. Death occurred about fifteen hours after taking the poison.

Autopsy, made for the Coroner by Dr. Shapleigh, in the presence of Professor Gross, Dr. Townsend, Dr. De Young, and myself, thirty-eight hours after death, and twenty-four hours after a strong solution of carbolic acid had been thrown into the abdominal cavity.

Body large and well developed. Some dirty fluid issuing from the mouth and the nose. Rigor mortis well pronounced, and nails purple. Face livid, but not tumid. Pupils dilated one-half; corneæ clear; conjunctivæ not injected, and lids natural. Large suggillations over the back, and the buttocks and posterior surface of the lower limbs livid. The muscles and fasciæ of the dorsal and lumbar regions infiltrated with dark, fluid blood.

On opening the spinal column, the dura mater and pia mater were seen to be injected and ecchymosed, while the cord itself was decidedly softened. The vessels of the scalp were distended with liquid blood. The dura mater was wonderfully adherent to the inner surface of the cranium. The vessels of the pia mater were turgid with blood, and there was large subarachnoid serous effusion. The brain tissue was greatly softened, so much so, indeed, that the corpus callosum was torn asunder merely by separating with the fingers the cerebral hemispheres. The lungs were congested and the bronchi filled with mucus. The heart was very soft, readily permitting the finger to be thrust through its walls, and its cavities contained fluid blood. The lining membrane of the aorta and larger vessels was deeply stained, and nowhere in the vascular system was clotted blood found. The intestines were pale, but the stomach presented suggillations at its cardiac extremity. The kidneys were congested. The bladder was empty, and there was no appearance of menstruation.

Remarks.—The dose of atropia, for internal use, at the commencement of the exhibition, is, according to the United States Dispensatory, about one-thirtieth of a grain. In the case now recorded, three grains of the alkaloid were taken, which is a much larger quantity than I find to have been heretofore reported. Some idea of the enormous amount taken may be formed, when I state that that quantity is said by Geiger[1] to be equal to six hundred grains of the extract of belladonna, and by Pfitzner[2] to be the equivalent of seven hundred and twenty grains of the same preparation. The present case, therefore, ought to afford several points of interest, to which I shall briefly invite attention.

The physiological action of atropia on man has of late years been the subject of careful experiment and research, the more recent and most able writers on the topic being Dr. John Harley,[3] and Dr. Meuriot.[4] They both agree that it is a powerful cardiac stimulant in medicinal doses, the force and frequency of the whole circulation, as well as the tone and volume of the arteries, being increased by it. In excessive or poisonous doses, on the other hand, the drug diminishes the force of the heart's action and the tone and volume of the bloodvessels, with only a moderate acceleration of the circulation, or ultimate decrease of the rapidity of the heart's action.

My observations in the case under consideration lead me to coincide in the above statements, with the exception of that which relates to the effect of excessive doses on the frequency of the circulation. When I first saw the patient, the pulse was 106, at which it remained for eight hours, when it increased two beats. One hour and a quarter later it was 128, which was the maximum reached. The effect of an excessive dose of the drug upon the vascular system may, therefore, be thus expressed:

[1] Professor S. R. Percy. Prize Essay on Atropia. Reprint from the New York Medical Journal, December, 1868.

[2] Ibid.

[3] The Old Vegetable Neurotics. London, 1869.

[4] De la Méthode Physiologique à l'Étude de la Belladone. Paris, 1868.

Marked and persistent increase in the rapidity of the circulation; decrease in the force of the pulsations; and loss of volume and tone of the blood-vessels.

Atropia in medicinal doses is generally considered to accelerate the respiration, an opinion particularly insisted upon by Dr. Meuriot. Dr. Harley, however, concludes, from extended observation, that small doses exert no influence whatever upon this function. The inquiries of Dr. Harley refer solely to the action of medicinal doses, and so far these observers agree. But Dr. Meuriot states that the alkaloid in poisonous doses decreases the frequency of the respiratory movements, through paralysis of the pneumogastric nerves. His positive conclusions are not, however, borne out by the experience in the present case, in which the respiration was very decidedly increased in frequency. Thus, at the time of my visit, it was 26, and it was only after eight hours of active treatment that it fell to 18. The subsequent acceleration was doubtless due to exhaustion.

With regard to the cerebro-spinal nervous system, it is usually taught that atropia always produces restlessness, insomnia, and delirium, and that poisonous doses prolong these effects for many hours, until the patient generally passes into coma. Both Dr. Harley and Dr. Meuriot insist upon these effects; but in the case here recorded the restlessness and delirium were evanescent, and, instead of insomnia, lethargy soon set in, and was quickly followed by profound stupor.

The action of the drug on the hollow viscera in this case was somewhat obscure. About two hours after taking the pills, the bowels moved under the stimulus of an injection, and eight hours later, when the patient's urine was drawn off, it was observed that they had acted again. How far this effect was due to the purgative action of the calomel and rhubarb, taken early in the morning, I am unable to decide; nor is it in my power to state whether the urine was passed at the same time. Poisonous doses of belladonna are said to provoke frequent micturition; but this could scarcely have been possible in this case, as I drew off fourteen ounces of urine ten hours after the taking of the drug, and none was found in the bladder after death. Retention of urine had possibly occurred, along with suppression of the secretion from congestion of the kidneys; and this view will appear the more probable when it is remembered that the effects of atropia are much more decided when the quantity of urine is small; in other words, that they are proportionate to the activity of the kidneys, through which organs the alkaloid is principally, if not entirely, eliminated.

Atropia is said to be an emmenagogue. However this may be, no such action could be discovered in the present instance, notwithstanding the fact that the patient had menstruated twenty-seven days previously.

The treatment of poisoning by belladonna and atropia has, of late years, been invested with great interest, particularly with regard to the employ-

ment of opium and morphia as antidotes, the mass of evidence being in favour of the view that these agents are mutually antagonistic in their action. So fully impressed was I with this fact, that I took with me, on my visit, sulphate of morphia and a hypodermic syringe, and resorted to the so-called antidote, with the following results.

Nearly three hours after symptoms of poisoning had set in, one-half a grain of acetate of morphia was thrown under the skin. The apparent effect of this was to relieve the trismus. In fifteen minutes half a grain of sulphate of morphia was introduced. This brought down the respiration from 26 to 20, *but produced slight stertor*, and effected no change in the pulse. After the lapse of an additional fifteen minutes, the respiration in the meanwhile having been very irregular and feeble, another half grain was used. In fifteen minutes the pulse was reduced two beats; the respiration was 14, and *very decidedly stertorous;* and the bad breathing continued for half an hour after the vigorous use of artificial respiration and faradaism. A grain and a half of morphia, therefore, used hypodermically during the space of half an hour, merely intensified the poisonous effects of the atropia and still further jeoparded life.

It is not my object to vaunt, or detract from the merits of any particular remedy or treatment, but to furnish facts as they actually occurred, with the view of throwing additional light on a very important and a much-vexed question. With this end in view, I must confess that the experience in this case goes to justify and corroborate the conclusions of Dr. Harley on the question of the antagonistic action of opium and belladonna and their alkaloids. From a careful analysis of the recorded cases, he shows "that the evidence of antagonism in any given case is inconclusive" (p. 309); and "that all the effects of atropia, excepting, perhaps, the influence on the heart, are intensified and prolonged by the action of morphia, induced previously, or at any time during the operation of the former" (p. 291). I may, therefore, be allowed to express the opinion that, in the present state of our knowledge on this subject, it would be unsafe to rely on opium or morphia, to the exclusion of other measures, when an excessive dose of belladonna or atropia has been taken, and particularly so when the system is fully under the effects of the drug.

The good results of artificial respiration were manifest in this case. On several occasions death by apnœa was imminent, when efforts in this direction were relaxed, and to it principally, if not entirely, do I ascribe the remarkable prolongation of life. Hence, I fully indorse the opinion expressed by Dr. Harley that our efforts must be directed to sustain the breathing in the treatment of poisoning by belladonna. Veratria was also, probably, of essential service. At all events, it proved to be a powerful spinal stimulant.

Professor Percy suggests that, when a large dose of atropia has been taken, and it has become absorbed into the system, much good may be

expected from the free administration of diluents. From numerous experiments upon dogs, he concludes—

"As a rule, if atropia is given without water, the effects are much more irritative, and last much longer, than when a sufficiency of water is allowed. When death takes place where water is not allowed, there is always congestion of the kidneys. Morphia, although an antidote to atropia in ordinary cases where water is freely allowed, is hardly an antidote where fluid is entirely withheld. A much larger dose of atropia may be borne without danger, if care is taken to keep the system well supplied with fluids; and the effects of poisoning pass off much more rapidly if warm diluents are prudently administered. Where diluents are freely given, the kidneys perform their function, and gradually remove the poison from the system; but where large doses of the medicine are given unaccompanied with liquids, the kidneys are unable to eliminate either the poison or the urea, and the animal consequently dies, frequently only from uræmic poisoning, at other times from the double effect of the poisoning from the alkaloid, and uræmic poisoning as well." (p. 12.)

When it is remembered that atropia is eliminated principally by the kidneys—elimination by the skin and mucous surfaces being very slight—the foregoing suggestions of Professor Percy would appear to be of value, and should be thoroughly tested.

The post-mortem appearances were of a negative character, as they merely pointed to rapid decomposition. A microscopic examination of the blood, made by myself, disclosed a few shrivelled and crenated corpuscles floating amid others of natural size and shape. Dr. Keen was unable to discover any in the specimen sent to him; but found bodies, which may have been deformed blood-cells, and a large amount of granular matter. The blood never coagulated; it was thoroughly decomposed.

A word in regard to the means of detecting the alkaloid in instances of poisoning by it. The perusal of the case shows that a cat was subjected to the usual physiological test, the injection of the urine of the patient under the skin, the effect of which was dilatation of the pupils. At the post-mortem examination of the body of the deceased, I was enabled to collect about a drachm and a half of the cerebro-spinal fluid, mixed with a little blood, which was afterwards separated from it. On the evening of the 13th of November, or ten days after death, I threw twenty drops of that fluid beneath the skin of the nape of the neck of a kitten. In two minutes the pupils were dilated so widely as to leave the merest line of the irides perceptible. After an hour they were in the same condition; and the kitten had lost its playfulness, avoided the light, and, when it was made to walk, it moved very slowly, as if with hesitation. This experiment, showing as it did how deeply the fluids of the body were saturated with the poison, is entirely novel, and may prove not only of interest to the physiologist, but highly important in a medico-legal point of view.

This case was the subject of criminal action against the druggist who compounded the prescription, at the April term, 1869, of the Oyer and

Terminer Court of the First Judicial District of Philadelphia, Judges Brewster and Ludlow presiding. The jury returned a verdict of involuntary manslaughter, with a recommendation to mercy. The counsel for the accused moved, however, for a new trial, and the case is, therefore, undetermined.

In conclusion, I must express my thanks to Professor Gross, Dr. Carter, Dr. Townsend, and Dr. Andrews for their valuable assistance and the unwearied interest which they evinced in the management of the case now recorded.

PHILADELPHIA, July, 1869.

ART. XIV.—*Poisoning by the Cyanide of Potassium; Recovery.*

By H. P. STEARNS, M. D., of Hartford, Conn.

APRIL 25th, at 4 P. M., I was called in haste to visit a man said to be poisoned. Thinking a stomach-pump might be of use, I took one with me, and within five minutes saw the patient, around whom a crowd of persons were gathered. The man was lying on the floor upon his back, while a homœopathic practitioner was assuring the company that nothing whatever could be done—the man was dying. Some one inquired if he could not use a stomach-pump with advantage, but he still affirmed that it was of no use; but if I wished to use it, he would gladly place the case in my hands.

Upon inquiry, I learned that the man, a healthy Irishman, not addicted to liquor, had by mistake taken a mouthful of a solution of cyanide of potassium, which was placed in a stone jar, supposing at the time that it was water. Finding, however, that it was something else, he swallowed only a part of what was in his mouth, and immediately went up one story to a sink where there was water, and, while in the act of getting some, became insensible, and fell down.

When seen by me he was entirely insensible, his hands and face covered with a cold perspiration, breathing not oftener than four or five times a minute, and stertorous; pupils largely dilated, and insensible to light; the pulse at the wrist not perceptible. He, however, continued occasionally to breathe, or gasp for breath, and I had him placed upon a table. Finding the jaws quite firmly closed, and of course inability to swallow, I introduced a piece of pine wood, and after forcing open the jaws—with no little difficulty—succeeded in getting down the tube of the stomach-pump. I immediately poured down half a pint of warm water, with some whiskey; and thinking there might possibly still be some of the poison not yet absorbed in the stomach, attached the pump and emptied it. I then introduced two or three tablespoonfuls of whiskey diluted with milk, and within a short time had the satisfaction of feeling the pulse beating feebly and slowly at the wrist. After repeating the dose in smaller quantity, at short intervals, three or four times, the breathing became more frequent, and the pulse was felt at the wrist, numbering forty per minute.

By this time the patient began to show some signs of distress by moans, and the tube was withdrawn from the stomach. After waiting half an hour, finding that the pulse did not improve, and that he continued to remain unconscious, the tube was again introduced, and the dose repeated, which was followed in a few minutes by a decided improvement of the pulse. In about half an hour from this time he vomited quite freely, after which he was placed in a carriage, though still unconscious, and removed to his house, about a mile distant. After arriving at home he did not appear to suffer any pain, and he soon fell asleep. In about three hours he awoke, having a dim perception, as he afterwards stated, of where he was. He again soon fell into a slumber, and towards morning awoke entirely conscious, and feeling very hungry. He greatly enjoyed his breakfast, and at the time of my visit, at about eight o'clock, was walking about and apparently well, and the next day he resumed his usual occupation. He says his appetite and digestion are better than they have been for months.

In treating this case, I used the tube of the stomach-pump, as he could swallow nothing, for the purpose of introducing stimulants into the stomach, rather than for the purpose of emptying it, though this was also done. The action of hydrocyanic acid being so very rapid, I had little expectation of lessening its effects by this means; but as this poison is more speedily eliminated from the system than most others, and he had already lived fifteen or twenty minutes after taking it, my design was to stimulate the almost paralyzed heart, if possible, to activity until elimination was effected. I used whiskey, as this was at hand, and, in fact, it did not occur to me in the excitement of the moment to use ammonia, though this is the stimulant most highly recommended, and doubtless may be of service in some cases. It appears to me, however, that in all cases where whiskey can be introduced into the stomach by means of a tube, or otherwise, we should expect more permanent effects than from ammonia, and consequently afford the patient a better chance for recovery.

ART. XV.—*Description of a New Self-sustaining Vaginal, Uterine, and Anal Speculum, combined, for Examinations and Operations.* By J. STOCKTON HOUGH, M. D., Resident Physician to the Philadelphia Hospital, Blockley.

THIS instrument is designed to serve several purposes, viz., a vaginal speculum for examinations, and also for operations; an anal speculum for examinations and operations; a speculum for uterine examinations and operations—or, in other words, three sets of blades are adapted to one mechanism, thereby serving the purpose of three or more separate instruments. The mechanism of the instrument involves the same principle as the one described in the July number of this journal, viz., parallel expan-

sion, and expansion at apex, either separately or combined. It is particularly adapted to operations, but this modification has not in the least impaired its value or utility for all the various examinations for which a speculum is used. It is made of speculum metal, and has three sets of blades adapted to the same mechanism, which are easily and quickly attached and detached without the aid of screws, catch, or spring, and are very secure and compact when in position.

Fig. 1 represents the speculum with the largest set of blades attached. The mechanism consists of a slotted steel bar C C, upon which slide two grooved pieces B B, having a projecting shank M M, through which the screw I I works. This screw has a very quick running thread cut upon it, and requires but a few turns to separate the blades to their full extent. It is operated at its head F in the middle. There are two small screws H H (Fig. 3) attached to the end of the projections M M, which run through a slot in the end of the shank of each blade for the purpose of separating the blades at apex. The slides have a projection E E from their lower and upper edges, and are slotted (K) outwards to receive the fulcrum pin P in the blades. The lower edge of the blades is extended backwards, and forms a shank, L L, which shank passes through the slot in the bar C C, through an opening in the slides B B, and along the projections M M, which resist the pressure made at the apex of the blades. The blades consist of a single piece of metal having a projecting pin P (which forms a fulcrum of the lever), and are of the shape shown in the cuts. They have what may be called a corded edge, that they may not wound the tissues brought in contact with them. The blades are attached or detached by expanding them to their full extent, and separating them at apex, which is done by grasping the blade near the apex, and drawing it back until the slot in the shank L is liberated from the screw H; then the blade can be withdrawn from the notch K, and the slot in the bar C. The various blades are replaced by the reverse motion and manipulation. This set of blades (Fig. 1) is intended for vaginal operations. They are four inches long, and their width is regulated by an arrangement (not shown in the cut) consisting of a bar, taking the place of the upper edge of the blade, hinged at the apex, and moving up and down at base by means of a screw; this makes the blade fenestrated.

Fig. 1.

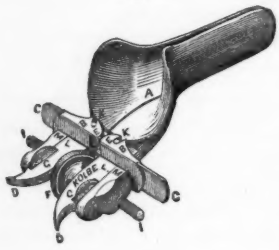


Fig. 2 represents the instrument with the blades expanded parallel, which is accomplished by simply rotating the screw I I at its head F.

Fig. 3 represents the instrument in perspective, as it appears when ex-

panded more at apex than at base, which is accomplished by pressing the shanks D D together, and running up the nuts G G, to hold them in posi-

Fig. 2.

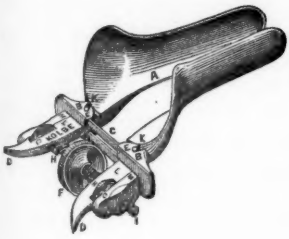
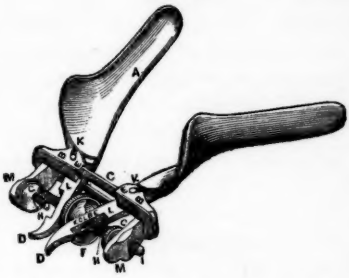


Fig. 3.



tion. The cut is defective, as it does not show the nut G in the notch, in the shank L.

Fig. 4 represents a single blade detached from the mechanism, and is one of the set designed for *vaginal examinations* and *uterine examina-*

Fig. 4.

tions and *operations*. For these purposes the instrument may be expanded either antero-posteriorly or laterally. The blades for making *anal examinations* and *operations* are not shown, but are much narrower than those shown in Fig. 1. The shanks are all the same. These blades are also adapted for vaginal examinations where the parts are very small, as in virgins; also in stricture of the vagina.

All of these blades, when in position and ready for introduction, have an opening along the upper edge, so that it will not be necessary to separate them to as great a distance, by the amount of the opening, as it would if they were in apposition at the time of introduction. The opening amounts to five-eighths of an inch, and does not impair the utility, nor interfere with the facility of introduction. This opening is not well shown in the cut. The instrument is introduced in such a manner that this opening between the blades will correspond to the surface of the canal to be operated upon; then it is expanded as before described.

For *uterine* examinations the blades are separated parallel or not, according to the case, and but one blade expanded at apex—that is the anterior blade, which is done by pressing with the thumb and index finger of the left hand on the shank D, and the *projection* M, on the opposite side, when

the blade whose shank is pressed upon will be moved only, thereby shortening it, as compared with the other which is in the posterior cul-de-sac of the vagina. When the blades are separated, you have a free surface upon which to operate, independent of the mechanism. It is self-retaining, because of the range and expansibility, and the relative expansibility of base and apex. The mechanism is very simple, easily understood and manipulated, *compact*, and not liable to get out of order, as there are no springs or catches, or other easily disarranged parts. It is claimed for this instrument that it is superior to any of the mechanical instruments in common use for any of the purposes mentioned in this article.

The blades should be detached and placed alongside the mechanism, when it is desired to carry the instrument in the pocket. A neat leather case, or chamois bag about the size of an ordinary pocket-case, will hold the entire thing, and makes a very neat arrangement for carrying it in the pocket. This instrument, the cost of which will not exceed that of the majority of mechanical instruments designed for vaginal operations *alone*, can be obtained of Mr. Kolbé, with either, or a complete, set of blades.

Any one possessing such a range of instruments could examine a case where a speculum would be required, without being "compelled to defer his examination or operation until an instrument could be obtained adapted to the peculiarity of the case."

ART. XVI.—*A Case of Artificial Anus, resulting from Incision of Intestine in an Operation for Strangulated Inguinal Hernia; Removal of the Loop of Intestine; Ligature to destroy the Septum; Employment of a New Instrument in place of Dupuytren's Forceps, followed by a Plastic Operation to close the Orifice.* By DAVID PRINCE, M. D., of Jacksonville, Illinois. (With two wood-cuts.)

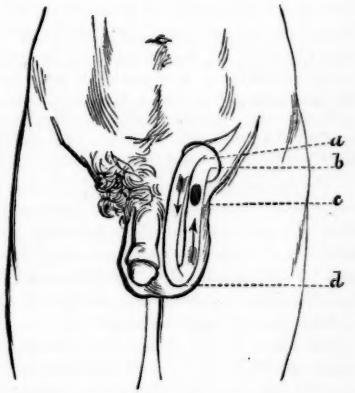
J. C. C., æt. 29, tall and slender, coloured clergyman, entered my infirmary Nov. 17, 1868. He had become in May, 1867, the subject of inguinal hernia, with the symptoms of strangulation, which continued twelve days, when a distinguished surgeon of Iowa operated upon him, leaving the patient with an adventitious anus, and the loop of intestine adherent within the scrotum. Whether the incision of the intestine was made upon the supposition that there was gangrene, or whether it was accidental, is not known. From subsequent examination, and the well-nourished condition of the patient, the seat of hernia seemed probably to be in the lower portion of the small intestine, in which the feces passed from right to left, and that the opening made by the surgeon was in the ascending portion of the loop. It follows that the feces all passed out of the abdomen into the scrotum, and, in returning into the abdomen, passed by the adventitious opening made by the operator. Much of the contents leaked out, especially when, in consequence of taking cathartics, or having a diarrhœa, they were unusually thin. The patient ordinarily wore a compress, with

a complicated fastening of his own invention—which, however, was very uncertain in its security. An attempt was made by the original operator to close the orifice by a plastic operation in the following September, which failed, and he repeated the attempt in November, December, and February, without success. In none of these operations was any attempt made to dissect up, and explore the intestinal protrusion; but according to the testimony of the patient, the operation was only practised upon the integument for the purpose of securing adhesion and closure of the cutaneous orifice. Bearing in mind the patient's account of the failure of preceding operations, it was resolved not to incur the risk of failure from the same cause.

My first examination of the case was intended to be thorough, but I failed to detect the entrance of the ilium into the external loop through the ring. It was supposed that the intestinal wall had so sloughed as to remove the partition wall, and that an operation which should sufficiently dissect the intestine from its adhesion in the canal, permitting it to be drawn into the abdomen, would lead to a closure of the orifice. The progress of the operation revealed the mistaken diagnosis, and led to a change in the plan of treatment.

Operation Nov. 19, 1868.—The loop of intestine was first dissected out from the scrotum, and the portion of intestine protruding through the external ring was cut off. It then appeared that there were two intestinal openings into the abdomen, and the philosophy of the case was for the first time unequivocally cleared up. The accompanying cut (Fig. 1) illustrates the anatomy of the case.

Fig. 1.



a. Intestine bearing the external ring.
b. Intestine entering the external ring.
c. Opening in the ascending portion of the loop of intestine.
d. Lower extremity of the intestinal loop in the scrotum. The arrows show the course of the intestinal fluids.

As Dupuytren's forceps for the gradual division of the septum were not at hand, a ligature was introduced through the septum, about an inch and a half beyond the level of the skin. Each end of the ligature was passed through a short double canula and made fast, and from day to day tightened up until it cut through. The fear of peritoneal inflammation prevented the carrying of the ligature to such a depth as certainly to restore the permanent continuity of the intestinal canal.

Velpeau attributes to Schmakhalden the original conception of the plan of introducing a ligature for restoring the continuity of the intestinal canal, which was published in 1789. Dr. Physick's operation by ligature, which he supposed to be original, performed in 1809, was followed by amendment, but failed of a cure, on account of the want of

depth of the channel made by the thread. The edges were afterward made raw, and twisted sutures introduced; but, after apparent success, the new union was torn open by the pressure of the feces from within.[1]

A good deal of constitutional fever followed this operation, the patient being delirious for several days. The rapidity of the pulse was kept down by veratrum viride at first, and the powers afterwards sustained by quinia, iron, and beef-tea. Some sloughing of the scrotum occurred, apparently in consequence of the arrest of pus in the pocket from which the intestinal loop had been dissected. The thread cut through in a few days, and the external wound contracted rapidly; but upon careful examination it was found that the septum came too near the surface to make it safe for the integument to close; but a stricture and arrest of intestinal contents should be the result. Besides, it was found that there was still a bridge and an orifice beneath it from one portion of intestine to the other, from which it was supposed that there must have occurred adhesion in the septum or eperon behind the ligature. This supposition is the more probable as the surfaces, covered by granulations, pressed against each other, and would thus have the best opportunity to hook into each other, and thus effect a continuity of tissue.

In order to deepen the channel, the employment of the forceps of Dupuytren (enterotome) was now contemplated; but the history of the instrument, a few sketches of which I will quote, led to the adoption of a modification of the plan (Fig. 2). Dupuytren commenced with the employment of a ligature, but, dissatisfied with this on account of its danger and uncertainty, he devised a forceps, to be gradually tightened by a screw, in order to cut through from one portion of intestine to the other. Out of 41 cases—21 by Dupuytren, and 20 by other surgeons—3 died.

"The adhesive inflammation," says Velpeau, "does not always take place at the periphery of the enterotome, even after it has been applied in the most judicious manner. In some cases it is almost impossible not to include between the branches of the instrument a portion of some important organ at the same time with the abnormal septum. Finally, many cases of artificial anus and of stercoral fistulas will persist to an indefinite period of time, in spite of the destruction or absence of every kind of eperon."

Velpeau relates a case in which death occurred at the end of eight days after the introduction of the forceps of Dupuytren, though the patient went on very well during the first four days. On examination it was found that gangrene had been produced by the pressure of the forceps, and the failure of adhesion had permitted the contents of the intestines to be poured into the peritoneal cavity.

The same surgeon relates another case in which an applicant for an operation died of erysipelas without having had an operation; and on examination it was found that one intestine was twisted around the other, so that the forceps would have endangered the effusion of feces into the peritoneal cavity, as actually happened in the other case from want of adhesion between the peritoneal surfaces.

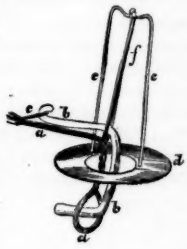
"Frequently, after the destruction of the eperon by the method of Dupuytren, the artifical anus persists under the form of a fistula, which cannot be closed by any means applied."[2]

The contemplation of the danger of failure of adhesion after the intro-

[1] Chelius' Surgery, with notes by South, vol. ii. p. 159.
[2] Velpeau's Surgery, by Mott, vol. iii. pp. 632, 634.

duction of the forceps of Dupuytren, led to the invention of an apparatus intended to avoid gangrene. For this purpose it is necessary to avoid a tight squeeze upon any of the tissues. A hook or tongue is made to invaginate the intestinal coats through a ring, thus bringing their peritoneal surfaces into close contact, but without such force as to interfere with the circulation. The perforation takes place by a gradual thinning over the point of the instrument, so that the orifice is at first small, and is surrounded by a large extent of serous surfaces in close contact. This differs entirely, in the principle of its action, from the instrument of Delpech, which cuts out a disk by the gangrene occasioned by the pressure of two rings together, involving more risk than by the forceps of Dupuytren, which only cuts a fissure.

Fig. 2.



The action of the instrument will be better understood from the cut (Fig. 2).

The apparatus consists of—

a a. A loop or ring to be introduced into one portion of intestine through the orifice.

b b. A perforating hook for the purpose of making a communication between two adjoining intestinal tubes.

The loop or ring having been introduced through one intestinal orifice, and the hook through the other, the hook or male part of the apparatus pushes a portion of the double intestinal wall through the ring or female portion, and slowly perforates the intestine by ulceration without gangrene. Two peritoneal and two mucous surfaces are to be perforated by the point or hook invaginating them within the circumference of the ring. As there are no sharp corners or points, the process is sufficiently slow to permit adhesion of the peritoneal surfaces. The opposite end of each horizontal portion of the apparatus has a hook to hold an elastic cord to aid in the pressure of the hook through the loop.

c. The elastic cord just mentioned.

d. A shield made of tin, to serve as the base of a lifting process to be instituted as soon as the hook *b* has fully engaged in the loop *a*.

e e. A derric for the lifting process.

f. An elastic cord attached to the combined arrangement *a a*, *b b*, and tied over the top of the derric *e e* as the lifting power.

In two weeks a passage seemed to have been made from one tube to the other, through which some of the intestinal contents passed, and in order to avoid the contraction of this orifice to too small a size, it become necessary to apply a lifting force to the hook and ring, in order to force them to divide the bridge lying between them and the surface. For this purpose a derric (Fig. 2, *d, e e, f*), was constructed with a base of tin having an orifice in the centre, with a loop of wire about three inches high. From the top of this loop an elastic cord was extended to the wire apparatus, constituting the hook and eye, by which a deep orifice had been made from one portion of intestine to the other. When the hook had come very near to the surface, a ligature was passed beneath the bridge, and having been passed through the tubes of a ligating canula, it cut through in a very short time.

After the complete and ample restoration of the continuity of the alimentary canal, the external orifice diminished rapidly, but at length it

came to a stand-still. Finally, to close this, a plastic operation was performed Feb. 23, 1869. This consisted in a free dissection of the integument around the orifice, and then the bringing down of a flap of integument from above by the first variety of the third method of my classification[1]—that is, by a jumping process. The flap was carefully adapted to its new position, and retained by sutures of iron wire. Moderate compression was employed to prevent its separation by pressure from the feces beneath. The surface from which the flaps had been taken was left to granulate and cicatrize. Adhesion was effected in every part, and the final cure was thus secured after a period of treatment of three months' duration. The patient was advised always to wear a truss to protect the part from the danger of protrusion from the pressure of the intestines upon the enlarged ring. The removal of such a horrid disability could not fail to secure the warmest gratitude of the patient.

Velpeau, in his work on Surgery, refers to a case of autoplasty by M. Collier, in which a cure was effected by detaching a portion of skin from the neighbourhood, and attaching it over the orifice by means of pins. The implantation of unaltered integument over the orifice has the advantage of providing material which is not likely to be torn apart by a considerable degree of distension produced by lifting and other efforts.

ART. XVII.—*Comminuted Fracture of the Skull; Trephined sixty hours after the injury; Recovery.* By ALBERT L. GIHON, M. D., Surgeon U. S. Navy, U. S. Hospital Ship "Idaho," Nagasaki, Japan.

ON the evening of February 6th, Hermann H. J., a native of Holstein, seventeen years of age, while furling the upper foretopsail of the American brigantine "Spray," was jerked forward of the yard, it is supposed, by the bellying out of the sail from the mate letting go the buntlines, and fell headforemost from a height of about sixty feet, striking the deck, and fracturing the skull on the left side over the parietal and temporal bones. He was picked up in a state of unconsciousness and carried into the cabin, where he lay on the bare deck, almost without attention, until late in the evening of the 8th, when the vessel arrived at Nagasaki, and he was seen first by Dr. J. H. Kidder, Assistant Surgeon U. S. N., and subsequently by myself. We found him comatose; his respiration retarded and noisy, with occasional puffing of the lips; his pulse slow and full, but regular; his surface cool; his pupils dilated and insensible; the left parietal bone broken into fragments, which were movable under slight pressure; severe contusion and tumefaction of the scalp, and extensive ecchymosis of the lids of the left eye and vicinity of the left ear, though there was no evidence of there having been bloody or serous discharge from the ear, mouth, or nostrils.

It being impossible to operate satisfactorily upon him, or to have him properly cared for afterwards, in the small, ill-ventilated apartment he was then occupying, wet cloths were applied to the head, which was elevated,

[1] See Report on Plastic Surgery, pp. 96. Philad.: Lindsay & Blakiston, 1868.

and watchers placed by him to prevent his tendency to roll over on the injured side; and early on the morning of the 9th he was removed to the hospital on board the Idaho, and at once prepared for operation. The coma was more profound than on the previous evening, but his condition, in other respects, was unchanged.

A large rectangular flap was reflected from the mesian line towards the left ear and eye, exposing the site of fracture, which was found to involve the larger portion of the parietal bone. The greatest depression was just posterior to the eminence, whence several long fissures extended towards the frontal and temporal bones. The edge of the depressed portion was forced so far beneath the neighbouring bone that an elevator could not be used, and I applied an inch trephine on the occipital side of the fracture; but even after removing the circle of bone, neither Dr. Kidder (who ably assisted throughout the operation, and to whose judicious care of the patient the success of the case is in great part due) nor myself were able to elevate the depressed fragment; and I accordingly removed, by Hey's saw, a triangle of bone, one inch in length and three-fourths of an inch in width at the base, the bevelled edge of which was tightly wedged into the diploe of the opposite side. The remaining fragments, the larger of which were entirely isolated, were then lifted into place, and a broad coagulum, which was spread out between the dura mater and the skull, was removed as completely as possible. The inner table was badly splintered, and considerable hemorrhage attended the operation, which lasted an hour and ten minutes. When all bleeding had ceased, the flap was laid back in its place, and covered with a compress of wet lint, kept in position by a six-tailed bandage; neither sutures nor adhesive straps were used in the dressings.

Feb. 10*th.* The patient still comatose; pulse accelerated, but no heat of skin; small quantities of essence of beef and milk-punch were placed in the mouth and readily swallowed.

11*th.* Beginning to manifest signs of returning consciousness; pupils contracting; breathing quiet, and more frequent.

12*th.* Still unconscious. Towards evening the pulse became rapid, the skin hot, and the face flushed. Was so restless that two attendants could scarcely retain him in bed. Kept the head constantly wetted with cold water; sponged off the whole surface of the body every hour, and opened the bowels by an enema.

13*th.* Opened his eyes, and followed a candle moved before them, but takes no notice when addressed. Continually tossing about in bed, and endeavouring to put his hand on the site of injury.

15*th.* Regards his attendants with a vacant stare; is attracted by lights, and heeds loud noises, but gives no evidence of understanding what is said to him, and makes no attempt to articulate. Swallowed a soft-boiled egg.

16*th.* The head becoming offensive; removed the dressings, which had not been disturbed since the operation, and found the wound in the scalp open in its whole extent, and exuding a dark-coloured, non-laudable pus. Applied strips of isinglass plaster, and covered the wound with dry greased lint. Ordered ten minims of muriated tincture of iron every three hours, and continued the frequent administration of small quantities of essence of beef and milk-punch. Opened the bowels with confection of senna.

18*th.* Shows signs of awakening intelligence, and, on the following day,

spoke for the first time, replying feebly in the monosyllables "ja" and "nein" when addressed. Renewed the compresses daily.

25*th*. Smiles when addressed; obeys what he is told to do, but speaks with difficulty, using only monosyllables. Pulse flagging; offensive odour from the wound. Saturated the compresses with permanganate of potassa, and ordered small doses of sulphate of quinia and tincture of chloride of iron.

March 5*th*. For the past few days there has been greater hebetude than previously. This morning is very despondent, bursting into frequent fits of weeping. Still only able to articulate feebly in monosyllables. A considerable tumefaction of the scalp has been forming over the site of operation, and is now of the size of a large walnut, and obscurely fluctuating. Introduced an exploring needle, and discharged serum and fluid blood, indicating a recent hemorrhage outside of the dura mater.

6*th*. Considerable febrile reaction, headache, and restlessness, which were relieved by making an incision into the tumour, and discharging its contents.

11*th*. Left his bed and sat up for half an hour. Is beginning to frame sentences. Wound open in a great part of its extent, and discharging pus.

April 4*th*. Has recovered the power of speech; wound almost cicatrized. From this time his convalescence was rapid. On the 19th of April he was discharged from the hospital, and a fortnight later was sent home by the North German Consul perfectly recovered, his general health excellent, and his mental faculties unobscured. The wound had entirely closed, and a depression in which the end of a finger could be placed, indicated the extent of loss of bone. The edges were smoothly rounded, and a firm, unyielding membrane replaced the bony tissue, and sufficiently protected the brain from injury.

The record of this case is perhaps not without value. The relative mortality after accidents and operations of this kind is usually so great, that the successful issue, in this instance, when the amount of injury was so considerable, and the operation was performed after the patient had lain so many hours almost totally neglected, must encourage us never to despair of a favourable result. The recovery of this patient was largely due to the excellent care he received while in the hospital, not only from Dr. Kidder, who devoted himself assiduously to him, but from all the regular attendants, and a large number of volunteer nurses, who never quitted his bedside a moment night or day. It was not expected that he would escape without some mental disturbance, and for a long time it was doubtful whether he had not suffered some impairment of the faculty of articulation.

NAGASAKI, JAPAN, June 21, 1869.

TRANSACTIONS OF SOCIETIES.

ART. XVIII.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1869. *May* 5. *Dislocation of both Bones of the Forearm forwards.*—Dr. FORBES reported the following case of this rare accident:—

It was stated by Petit that a dislocation of both bones of the forearm forwards could not take place without an accompanying fracture of the olecranon process of the ulna; and this assertion has been repeated by many authors in systematic works on surgery.

Malgaigne has, however, more recently collected six well-authenticated cases of this dislocation without fracture.

A blow upon the olecranon from behind, when the forearm was flexed upon the arm, seems in each case to have been the cause of the accident.

On the 10th of December I was called to see M. M., a boy about twelve years old. His accident had occurred but a short time previous to my arrival. He had been exercising himself in a gymnasium, and the proprietor who saw him at the time stated that while going up a ladder hand over hand he fell, striking, while falling, the back of his elbow "at the tip" against the margin of a table, the fall (which was only of about two feet) having taken place just as he had drawn his head near one round of the ladder which he held in the grasp of his right hand, and while in the act of extending the left hand to seize the round above.

On examination, the right forearm was found rigidly fixed at not quite a right angle with the arm. The arm was shortened and the forearm lengthened. The hand was supinated and the tendon of the biceps somewhat tense. The olecranon was discovered lodged distinctly in front of the humerus and above the lower margin of the trochlea, and the head of the radius separated from the capitellum by a depression in which the finger could be placed. The dislocation was complete.

While he was under the influence of ether I flexed the forearm on the arm, so as to disengage the posterior and upper margin of the olecranon from its position in front of the humerus, and while holding the arm firmly, both radius and ulna, being still strongly flexed, were brought downwards and backwards and the reduction was readily effected.

The general gonflement, tenderness, and discoloration of the entire extremity were excessive for some three weeks after the accident, and it was not until six weeks had elapsed that complete restoration of all the movements of the joint was accomplished, thus indicating how extensive must have been the laceration of the neighbouring parts.

Boyer, Velpeau, and Malgaigne have each recorded a case of this dislocation with fracture of the olecranon. In Boyer's case the man had

fallen from a height; the olecranon could be felt drawn up between the condyles, while the coronoid process and radius were lifted up by the brachialis anticus and biceps above the condyles of the humerus. The dislocation was readily reduced but easily recurred. The patient died of other injuries, and the post-mortem examination revealed a fracture of the base of the olecranon extending obliquely downwards and backwards.

Velpeau's case was of eight years standing when he saw it; the olecranon was not united to the ulna by bone, the connection being ligamentous, as we often find between the fragments of a broken patella; the radius and ulna rested on the anterior surface of the humerus, yet the patient had a very useful limb.

Dislocation of the Atlas upon the Axis.—Dr. FORBES exhibited a specimen showing this lesion, and made the following remarks:—

The specimen which I hold in my hand was removed from the body of a man who committed suicide by hanging. Having tied a silk handkerchief around his neck and fastened the end of it to a small part of a gas-pipe projecting from the wall of his room, and which was not higher than his head, he had apparently jumped up, and having raised his feet at the same moment, the left side of his head had been brought forcibly against the wall and the dislocation thus produced. He was found suspended by the neck with his feet on the floor, dead. His nurse had been with him just fifteen minutes before, and had been sent to get some iced-water; during his absence the patient accomplished his destruction. On his return with the iced-water, seeing the man suspended, the nurse seized him by the body and held him up, and called aloud for help. I heard him from a neighbouring room, and, running in, cut the handkerchief, the nurse still holding him up. Life was already extinct. On post-mortem examination this specimen was obtained: The odontoid process was still held in position by the transverse ligament, but the two check ligaments were found twisted around the top of the odontoid process, and the lateral displacement of the first vertebra was so great that the medulla spinalis was completely crushed. The inferior articulating facets of the first vertebra were entirely removed from the superior articulating facets of the second vertebra.

The case is an interesting one in a medico-legal point of view, the man having hung himself, yet his feet being found on the floor.

The rotary motion of the head is performed chiefly by the first vertebra moving on the second, and when this motion is forced beyond its limits the check ligaments may be either broken or twisted; if broken, and the chin at the same time elevated, there will be a displacement of the odontoid process by its either slipping under the transverse ligament or else rupturing it. Petit mentions the case of a child who was instantly killed by being lifted up by the head; the perpendicular impulse broke the check and accessory ligaments and allowed the odontoid process to slip under the transverse ligament without breaking it, the severe pressure of the dislocated process on the medulla spinalis causing immediate death.

Malgaigne records a case of rupture of only one of the check ligaments, which yet allowed a dislocation of the odontoid process beneath the transverse ligament without rupturing it; the circumstance of only one check ligament being broken prevented that degree of pressure on the medulla spinalis which would otherwise have caused instant death. The patient lived twenty hours.

Case of Suicide by Hydrocyanic Acid.—Dr. SHAPLEIGH reported the following case :—

George S. Twitchell, Jr., aged 26 years, convicted of murder, was condemned to be executed on the 8th of April. At a quarter past five on the morning of that day he was found dead in his cell. The prison keeper saw him the night before at 12 o'clock, or a few minutes after, lying in bed as if asleep. At two o'clock he was in the same position. It is known that he was alive at half past eleven. Therefore it was probably near midnight when he died. At nine o'clock I was summoned to the prison and made an inspection. The body, dressed in the ordinary day clothes, with exception of coat and boots, was extended upon the bed in a state of perfect repose—the arms and hands semiflexed. There was no froth about the mouth, which was partly open. The eyes also, partly open, presented no "remarkable prominence or brilliancy," the corneæ were dry—pupils semi-dilated. The lips and nails were blue, and upon the under lip there was a brown stain which could not be washed off. The countenance was pale, slightly tinged of a lilac colour. The arms and legs were cold, but the body was still warm. Rigor mortis had commenced about the neck and shoulders, but the limbs were quite flaccid ; there was not the slightest appearance of there having been a convulsion. The body exhaled no odour, not even from the mouth, nor could the slightest smell of prussic acid be perceived in the cell or about any of the utensils. Beside and near the head of the bed there was a chair, upon which there was an empty tin cup. There is a window in the end of the cell ; the air being colder on the outside, a constant draft sets in through the cell towards the corridor, where one of the watchmen was stationed. He noticed no unusual odour, nor did he hear any "death cry," heavy breathing, or noise of any kind. The cell had been searched, but no evidence of poison discovered. By request of the physicians of the prison the autopsy was postponed until half past three P. M. I was happy to avail myself of the opportunity to invite some of the well-known pathologists of our city to be present at the investigation. About fourteen hours after death, assisted by Dr. Butcher, resident physician, and in presence of Dr. Smith, visiting physician to the prison, Drs. Levis, Packard, Dyer, Adler, and others, I proceeded to make the post-mortem examination. The head was first examined ; upon removing the calvaria the brain exhaled a strong and decided odour which satisfied every one present that death had been caused by hydrocyanic acid or one of its compounds. The brain weighed fifty-two ounces ; it and its membranes were highly congested ; beneath the tentorium there was a large quantity of serum—full two ounces. The lungs and liver were filled with blood ; the heart was in a normal condition. The mucous membrane of the stomach was decidedly congested, and there was one spot of effused blood beneath the mucous coat. The small vessels were visible all over the coats of the intestines. Every part of the body upon dissection gave out the odour of the poison. The blood was dark and in a fluid state. A thin layer presented the peculiar blue or purple tint so often observed in cases of poisoning by hydrocyanic acid. Fully persuaded that something which had contained the poison must be concealed in the cell, Dr. Butcher and I commenced a systematic search, and soon found, hid in the toe of a boot, a half ounce vial half filled with a yellowish turbid fluid, smelling strongly of hydrocyanic acid. This fluid and the stomach with its contents, were submitted to Dr. John J. Reese for analysis. The

fluid proved to be a solution of hydrocyanic acid; not a trace of the poison could be found in the stomach. Probably the deceased poured about two drachms of the poison into the tin cup, and then (having corked the vial, wrapped it in paper, and concealed it in the boot) drank the portion from the cup while lying on the bed. If the medicinal preparation was used, and it is reasonable to suppose that it was, since to obtain any stronger solution would be difficult if not impossible, he took about two and two-fifth grains of the anhydrous acid.

Dr. PACKARD stated that he had taken some of the blood in this case for examination. It remained fluid, and of the same bright colour as when first poured out from the vessels. Microscopically, the corpuscles were seen in rouleaux, scarcely a single isolated one being discoverable. The rouleaux were composed of larger numbers of corpuscles than those usually seen.

Dr. SHAPLEIGH said further: In connection with the above case, an account of a suicide by cyanide of potassium, which I lately investigated, will not be uninteresting.

H. E., aged 23 years, had been much depressed in spirits for a few days. On the morning of the 10th of March last, he arose and was sitting on the side of the bed while his wife was dressing. She saw him unwrap a package and take therefrom a white substance the size of the first joint of her thumb, which he conveyed to his mouth, crushed with his teeth and washed down with water from a basin. The paper dropped upon the floor, and he immediately fell back upon the bed breathing heavily. His wife suspecting that he had taken poison went in search of milk, which she obtained and tried to administer but failed, the jaws being rigidly contracted. By the advice of a neighbour she gathered up the poison, and ran for Dr. Krause, whose office was about half a square from the residence of the patient. The doctor discovering that the parcel contained cyanide of potassium, hurried to the scene. He found it impossible to relieve the man, who died soon after his arrival. About one drachm of the cyanide was taken. Death ensued in about twenty minutes.

The symptoms, as narrated by Dr. Krause, were dyspnœa, loud mucous rattle, insensibility, contraction of the jaw, and spasms of the extremities.

The post-mortem appearances were almost the same as in the first case narrated: the countenance was pale and composed; there was excessive turgescence of the vessels of the brain and its membranes, with serous effusion into the ventricles. The mucous membrane of the stomach was greatly congested, and there were numerous spots of effused blood; the lungs and liver were also congested; the right ventricle of the heart contained some dark blood, the left ventricle was empty. The blood was dark and fluid, and when in a thin layer, of a glimmering blue or a purple tint. Upon dissection every part of the body exhaled the odour of hydrocyanic acid.

Case of supposed Strangulated Hernia; Operation; No Intestine found in the Sac; Recovery of the Patient.—Dr. WALTER F. ATLEE reported the following case:—

J. D., aged 60 years, entered the St. Joseph's Hospital, April 21, 1869; he had suffered for about twelve years from a right inguinal hernia, which, according to his own statement, he had always been able to reduce perfectly without difficulty whenever it had protruded. A truss had always been

worn in the daytime. Five days before, on account of sharp abdominal pains, he had taken a dose of oil, which operated freely; the night following, the truss was not put on, and the rupture descended into the right side of the scrotum, became larger and harder, and could not be pushed back as it always had been before. Since that period, five days, no evacuation of the bowels had been obtained, nor had the scrotal swelling diminished. This swelling was about as large as an ordinary fist, and of the usual shape of hernial protrusions. An attempt at reduction was made without success, and the man was ordered a warm bath, and put to bed with the scrotum maintained in an elevated position until the following day.

April 22. After consultation with my colleagues, and having again made an ineffectual effort, while the patient was under the influence of chloroform, to reduce the swelling into the abdominal cavity, the usual operation for the relief of strangulated inguinal hernia was performed. When sickened by the chloroform, a ventral hernia above the umbilicus was observed. When the sac was opened nothing was found therein but serous fluid and some gelatinous matter. The wound was covered by a cloth saturated with a mixture of oil and carbolic acid, and a dose of opium administered.

The following day the bowels were freely moved by the administration of an injection. When questioned again in regard to his scrotal swelling, the man said that his rupture was always entirely reducible until about three months before, since when a portion of the rupture had always remained out, and growing larger and larger had finally become as large as a chicken's egg.

What was the precise pathological anatomy of the swelling upon which I operated in this case I am unable to say. The parts were examined sufficiently to enable us to be sure that no intestine was protruding into the inguinal canal, and that was all the search we thought justifiable. It was not a hydrocele of the cord, for the cord was behind the sac, nor was it a hydrocele of the tunica vaginalis, for the testicle was felt separate from it. It was probably, therefore, a case of dropsy of an old hernial sac; a rare affection of which some writers upon hernia make mention, but of which I know of no recorded case.

The patient who underwent this operation is doing well, and will have recovered from it in a few days.[1]

The case is reported as an instructive one, for had the state of affairs that really existed been at all suspected, an operation of the magnitude of the one practised would not have been performed. The sac could have been emptied by the introduction of a trocar, and then, if the symptoms of strangulation still persisted, more active measures could have been adopted.

[1] This patient has since left the hospital, entirely well.

ART. XIX.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1869. *March* 11. *Elephantiasis Arabum.*—Dr. T. H. ANDREWS presented the specimen with the following history:—

Miss M., æt. 30, seventeen years ago was stung on the affected leg by some insect; from that period dates the enlargement.

At times, as the disease advanced, it would seem to spread from the leg to the body, accompanied with an erysipelatous blush, nausea, vomiting, &c. General health was good, although gradually declining. The patient never lost complete use of the limb, walking two miles upon it one week before death. Death was preceded by hectic. The sound leg was as preternaturally small as the diseased one was large.

Dr. ASHHURST remarked that although this was the first specimen of Elephantiasis Arabum which had been exhibited to the Society, he had himself, some years since, exhibited a specimen of greatly enlarged cervical and bronchial glands, from the body of a patient whose chest and abdomen were the seat of several broad bands of indurated tissue, which presented the appearance characteristic of what is now designated as sclerema or scleroderma. (*Am. Journ. Med. Sci.*, Jan. 1865, pp. 128–129.) The resemblance between the structural appearances of these patches or bands and those of Elephantiasis Arabum was commented upon at that time both by himself and by Dr. Henry Hartshorne, the latter gentleman indeed expressing the opinion that the disease known as elephantiasis of the Arabs was intimately connected with, if not dependent on, a morbid condition of the lymphatic system. Since that period, Feb. 24, 1864, the whole subject had been worked up much more thoroughly than it had been previously, and Dr. Ashhurst believed that the views then entertained by Dr. Hartshorne and himself as to the connection between sclerema and elephantiasis, were those now generally adopted by pathologists. The subject being referred to a committee, the President appointed Drs. Wm. Pepper and Andrews, who reported, May 27, as follows:—

Report.—Your Committee to whom the specimen of Elephantiasis Arabum, presented by Dr. T. H. Andrews, March 11, 1869, was referred, would report: That through the kindness of Dr. C. R. Wiley, of Vineland, N. J., under whose care the patient was, they have obtained the following clinical history of the case. The specimen was removed after death from the body of a lady, æt. 30 years, who was a native of New Jersey, and had resided near Vineland in that State. The affection began, at the age of 13 years, with acute inflammation of the foot and lower part of the limb, and was supposed to be due to the sting of an insect, inflicted while the child was walking through a cornfield. The inflammation continued for some time with occasional quite severe attacks of pain, but subsequently subsided, leaving merely tumefaction of the limb, which continued until her death, gradually acquiring the characteristic features of elephantiasis arabum.

The patient was, it was thought, scrofulous, though her parents are living and healthy at very advanced age; she suffered with dry cough, and in her general appearance resembled a consumptive subject, but still appears to have enjoyed fair health until the age of 24 years. She suffered from repeated attacks of bilious colic, lasting several days each

time; and at times the leg was so painful that she was unable to use it. Usually, however, she was very active, and one week before her death walked a distance of 1½ miles. She was married and had three children, all of whom are healthy.

Under treatment, both constitutional and local symptoms seemed temporarily palliated. No complete autopsy was made.

The specimen obtained consisted of left leg, which had been removed after death. The foot and entire leg were involved, and enormously enlarged, measuring—

Circumference of foot around instep,	12	inches
" leg at ankle,	20	"
" leg around calf,	23	"
" thigh at point of removal (4 in. above knee)	22	"

The skin was discoloured, and presented innumerable fine wrinkles; along the inner side of the calf these wrinkles were larger, deeper and wider, giving to the surface a coarsely lobulated appearance. There was a marked constriction at the knee and ankle, forming at the latter point a depression 1½ inches in depth; the tissues above and below this constriction lay in close apposition, and the skin had assumed somewhat the character of mucous membrane, and was coated with a thick, ill-smelling smegma. The constriction at the ankle extended obliquely upwards and forwards from internal malleolus, growing rapidly more shallow to the front of the leg about four inches above the ankle joint. There were also two other deep constrictions, which, beginning respectively at the junction of the upper and middle, and lower and middle thirds of calf, ran forwards on the inside of the leg to converge at a point corresponding to the spine of tibia midway between ankle and knee.

There was no ulceration of the surface. The tissue over the instep was very much indurated, and there was a very prominent pad-like mass of tissue above ankle which was hard, and presented a nodulated surface; elsewhere, and especially on outer surface of leg, the tissue was more lax.

At the point of amputation, the femur appeared quite healthy; the periosteum was also healthy. The derm formed a dense layer at this point about one-sixth of an inch thick, of grayish-white colour; and was succeeded by a layer 1½ inches thick, of subcutaneous fat, intersected by strong white bands and planes of fibrous tissue which inclosed islets of adipose tissue. The dense derm merged gradually into this subcutaneous layer.

Over the leg, epidermis appeared of normal thickness, but on making section through calf, a layer 4½ inches in thickness was discovered between epidermis and deep fascia of leg consisting of the subcutaneous tissue enormously hypertrophied and presenting a succulent rather lax structure of grayish colour, but interspersed with small round islets of fat, and intersected also with white bands of fibrous tissue. This subcutaneous tissue gave exit to a moderate amount of fluid of a clear serous character. The tissue of the derm was examined in the calf where the thickening was extreme, by making thin sections, and slightly teasing out the tissues in glycerine and acetic acid. Under low power it appears as a rather close network of connective tissue and abundant yellow elastic tissue in large coarse branching fibres. There were also some broad bands of dense fibrous tissue. Under a higher power (350 diameters) numerous oval nuclei were seen in the meshes of the connective tissue.

Nerves.—Sciatic nerve at point of amputation was quite healthy, with-

out any excess of fibrous tissue. Very few nerve fibres could be detected in the derm, but those which were seen appeared normal.

Vessels.—The femoral artery at point of amputation was quite healthy. The vessels in the derm in the thigh, where but a moderate degree of thickening existed, were comparatively few in number, and showed positive, though not extreme thickening of their adventitious sheaths with accumulation of round, singly nucleated cells (lymphoid elements). These cells were evidently accumulated especially along the track of the vessels, though they did not entirely conceal their true coats.

In the derm and subcutaneous tissue of calf the coats of the vessels were obscured by the formation around them of large numbers of similar round, delicately granular, singly nucleated cells. These cells appeared to originate in the perivascular sheaths, which became widened and filled with them. In some instances the cells did not seem restricted by the perivascular sheath, but appeared as accumulations along their outside. This change affected especially the minute arterioles, whilst the capillaries remained comparatively healthy—showing merely an increased number of nuclei in their walls.

The vessels in muscles of calf also showed a less degree of thickening of perivascular sheaths, with marked multiplication of oval nuclei of adventitia. The lymphatic glands were apparently not enlarged.

Muscle.—The muscles in thigh were of normal size, and on microscopic examination presented healthy appearance; in those in the calf a majority of the fibrils were quite normal, but in some the transverse striation was faint or quite lost; some of the fibrils also had an appearance of longitudinal striation, mainly due to thickening of the sarcolemma, since acetic acid removed it and disclosed the normal transverse striation in most instances; though a few fibrils still retained this fibrous appearance.

The rare specimen thus described presents all the characteristic appearances of elephantiasis arabum. The disease was more strictly limited to the derm and subcutaneous tissue than is perhaps usual when the affection has lasted so long, and attained such extreme development. Thus the epidermis was quite healthy; the intermuscular planes of connective tissue not thickened, and none of the deeper tissues, the muscles, periosteum, or bones materially affected. It is due to this immunity that the patient retained the power of locomotion until the latest period of the disease. There was a marked absence of the discharge of milky or serous fluid from the limb, which occurs in a certain number of cases; and, so far as known, there was no implication of the lymphatic glands.

The clinical history of the case is somewhat brief, but in this report no reference will be made to the many interesting clinical questions which arise in connection with the study of elephantiasis and some apparently kindred affections, as, in particular, sclerema.

It is evident, however, from the initial attack of erysipeloid inflammation of the affected part, from the peculiar acute swelling of the limb, and from the subsequent severe attacks of pain that this case belongs to the most frequent variety of elephantiasis arabum; the other or "apyrexial" form described by Duchassaing,[1] being much more rare.

In considering the changes which occur in the affected part during the course of the disease, there are manifestly two stages: the first more or

[1] Études sur l'Éléphantiasis des Arabes. Archives Gén., 1854, pp. 412.

less acute, in which there is rapid swelling, due partly to serous infiltration and partly to the proliferation of some of the cellular elements of the derm and subcutaneous tissue; and a subsequent one in which these newly-formed cells slowly became developed into fibro-cellular tissue, leading either to enormous hypertrophy of the part, as in Barbadoes leg, or to contraction and induration, as in the atrophic form of elephantiasis arabum, and in sclerema, which is in all probability a kindred disease.

It is necessary therefore in order to gain accurate ideas of the seat and nature of this morbid process, that the precise character and seat of this swelling should be determined. Virchow, to whom we are indebted for the first accurate studies of the histology of elephantiasis, styles this swelling "lymphatic œdema," and attributes it to proliferation of the cells of connective tissue and to distension of the lymphatic vessels which are obstructed owing to the hyperplasia of the lymphatic glands. He also states that there is thickening of the epithelium of the smaller lymphatic ducts. According to his view the œdema is merely a secondary occurrence, and the essential point in the disease is the formation of connective tissue.

In a highly interesting paper on "Sclerodermia and its Relations to Elephantiasis Arabum,"[1] Rasmussen first referred the essential seat of the morbid process to the adventitious sheaths of the smaller vessels. In two well-marked specimens of Barbadoes leg, this distinguished pathologist observed "a moderate prolongation of the papillæ, a copious deposition of pigment in the rete, and a great condensation and increase of volume of the corium; the fasciculi of subcutaneous connective tissue were greatly increased and decussating, but so that remains of fat-cells were still demonstrable in many places; but what there especially and immediately caught the eye, was an exceedingly abundant development of lymphoid cells, forming sheaths around all vessels." These, lymphoid sheaths were of considerable width in places, and presented, on their periphery, a belt of elongated cells, and exterior to this a more or less broad belt of fibrillar connective tissue. "Everywhere the thickness of the lymphoid sheaths of the vessels was in inverse proportion to the formation of connective tissue, and in the highest development of the latter they disappeared completely, so that it was quite evident that the lymphoid cells in these sheaths were the matrix of the entire formation of connective tissue."

There can be no doubt from the peculiar infiltration of the tissues ("lymphatic œdema"), and from the discharge of large quantities of fluid possessing all the properties of lymph as has been observed in a certain number of cases (Pachydermia Lactiflua of Fuchs), that there is both an excessive formation of lymph in the affected part, and an obstruction to its free passage into the lymphatic trunks.

It is of course, therefore, evident that this observation of Rasmussen is a strong corroboration of the view of Brücke, Leydig, Robin, and His, that the true starting point of the lymphatics is in the perivascular sheaths and adventitia of the small bloodvessels.

In the case which forms the basis of this report, the morbid process had advanced to a very high degree, so that it appeared that the transformation of the early formed lymphatic cells into fibro-cellular tissue was to a great extent completed. It was, however, easily demonstrable that

[1] Hospitals-Tidende, May and June, 1867. Translated by W. D. Moore, M. D., in Edinburgh Med. Journ., vol. xiii., pt. i. 1867, pp. 200 and 318.

the vessels of the derm and subcutaneous tissue presented in a marked degree the proliferation of cells in their perivascular sheaths and adventitia, as observed by Rasmussen.

It did not appear, however, as though the hyperplastic process were strictly limited to the coats of the vessels, since there also seemed to be marked increase of the subcutaneous connective tissue in points where no vessels could possibly be traced. This was especially seen in the groups of oval nuclei which were found in the meshes of the dense connective tissue of the deeper layers of the derm.

WILLIAM PEPPER,
THOMAS H. ANDREWS, } Committee.

March 25. *Dysentery; Abscess of Liver.*—Dr. DE F. WILLARD presented the specimen for Dr. Hough, and gave the following history:—

W. E., æt. 32; sailor; intemperate; single; admitted to Philadelphia Hospital, March 3, 1869. No previous history could be obtained except that he had just returned from a voyage to the West Indies, but it could not be ascertained whether he had ever resided in the warm countries.

When first seen, the patient was dull and stupid, complaining of pain, sharp and lancinating, on left side of thorax, about the 8th rib, which was treated by dry cups for pleurisy, which he evidently had contracted from cold and exposure. He complained of no pain in hepatic region.

On the next day, typhoid symptoms began to make their appearance, the tongue became dry and foul, the pulse frequent and feeble, and the stools frequent, while the abdomen was painful under pressure.

He soon became delirious, and continued thus until near his death, the type being low and muttering. The stools were passed eight or ten times per day, sometimes tinged with blood, sometimes apparently containing a small amount of pus. No account given by patient of any previous intestinal trouble. There was still no pain or marked tenderness over the hepatic region, although the border of the liver could be felt extending just below the margin of the ribs, and there was nothing to point especially to disease of that organ. The whole abdomen, however, was remarkably tender and painful, scarcely even permitting the weight of cold cloths. Taking these symptoms, and having no history of the intestinal disease which was discovered after the post-mortem examination, the diagnosis of typhoid fever was made, although there were no rose-coloured spots. (There had been epistaxis upon several occasions).

This was his condition on Friday the 19th, when the skin and conjunctiva became slightly jaundiced, which slowly increased, until his death on Sunday the 21st, but was never very marked.

Autopsy, thirty-six hours after death.—Skin and conjunctiva still slightly jaundiced. The marks of the cups upon the body are large, black ecchymoses, showing a vitiated condition of the blood. The walls of the abdomen have already undergone marked decomposition. On opening the cavity of abdomen, there was but small amount of effusion, and slight signs of general peritonitis. On attempting to remove the liver, a quantity of greenish pus escaped into the peritoneal cavity, and upon removing the organ from the body, both lobes were found to be the seat of extensive "metastatic abscesses," five or six in number, the largest containing several ounces of pus. They were all filled with thick greenish-

yellow pus, mixed with bile, and very fetid, and the tissue about them was rapidly breaking down.

Upon searching for the cause of these huge abscesses, the rectum and the greater portion of the large intestine, showed that the patient had suffered from dysentery of apparently long standing, as the whole tract was the seat of large and extensive ulcerations extending through the mucous membrane to the muscular coat, the walls were greatly thickened and in some portions of the rectum it seemed that almost the entire mucous membrane was eroded. The surface of these ulcers was covered with thick fetid pus in many places, thus showing abundant cause for the hepatic abscesses.

Under the microscope, the contents of these abscesses of the liver showed an abundance of pus corpuscles, and broken-down granular material. Portions of the intermediate hepatic structure were apparently nearly normal, showing well-marked liver cells, but all the parts in proximity to the abscesses were commencing to disintegrate. Contents of abscesses also showed plainly the presence of bile by usual tests. Spleen covered with thick layer of organized lymph, binding it firmly to peritoneum. Structure normal; small intestine apparently healthy, stomach also. Brain and contents of thorax not examined.

Dr. WM. PEPPER remarked that there was usually an essential identity between the symptoms and post-mortem appearances of such cases as these, and cases of pyæmia occurring after surgical injuries. There was one point, however, in regard to which he would ask the experience of the members of the Society, viz: Whether they had ever met with metastatic abscesses following dysentery, in any organ more distant from the seat of the disease than the liver, which is of course the first organ which any septic substances from the intestine reach. He stated that he was not aware that records of any such cases existed.

It is very well known that in pyæmia, the metastatic deposits do not follow the line of the circulation; since in injuries of the leg, for example, they are often found not only in the lungs, but in the spleen, liver, and kidneys. It is evident, therefore, that whatever the septic principle which causes their formation may be, it must be capable of passing through the very fine capillary network of the lungs to reach the left side of the heart. On this account principally, therefore, it is evident that Virchow's theory of thrombosis and embolism must be but a partial one, and it must be admitted that the cause of the "metastatic abscesses," must, in some cases at least, be a septic fluid capable of inducing capillary stasis. If, however, it be true that the metastatic abscesses following dysentery are limited to the liver, it would appear to indicate that these cases were rather to be attributed to embolism.

Dr. GEO. PEPPER stated that he had reported some time ago to the Society, a case of enormous abscess of the liver in a privy cleaner, constantly exposed to the foul inhalations peculiar to his occupation. At that time he sought diligently throughout accessible works for parallel cases, and incidentally his attention was called to abscesses of the liver following dysentery, but he found no cases where, after dysentery, the abscess affected a more remote organ than the liver.

Dr. ASHHURST said that he thought it had been established by the experiments of Savory and others, that all the pathological appearances considered as characteristic of "*pyæmia*" (so-called), might be due to conditions to which the names *septhæmia* or *ichorrhæmia* would be more

applicable. At the same time, his own observation (which was of course limited) had led him to believe that in those cases where the pyæmic patches had advanced to the stage to which the name of metastatic abscess was usually given, there would commonly be found thrombosis of the venous trunks in the neighbourhood of the original injury with secondary embolism. It had been asserted by some pathologists that in the respiratory process the capillaries of the lung were so much dilated as readily to permit the passage of embolic fragments, and in this way the occurrence of pyæmic patches in remote organs had been accounted for on the embolism theory; Dr. Ashhurst was not, however, aware of any observations which had proved the existence of this hypothetical dilatation. The very rapidly fatal cases of pyæmia, Dr. Ashhurst was disposed to attribute to the absorption of septic material (*septhæmia*), while those cases which depended on thrombosis and embolism, he thought assumed a more chronic character. Even in those cases where thrombosis was found after death, it was very possible that the pyæmic patches met with in the course of the systemic circulation might be due to blood-poisoning secondary to pulmonary embolism; or, on the other hand, the thrombi themselves might be secondary phenomena coincident with or even caused by the septhæmic condition.

April 8. *Cerebral Hemorrhage; Syphilitic Disease of Bones of Nose and Hard Palate; Death in twelve hours; Autopsy; Clot and Liquid Blood beneath Membranes of Left Hemisphere; Abscess in Left Middle Lobe; Cirrhotic Liver, with Syphilitic Deposits.*—Dr. T. H. ANDREWS presented the specimens for Dr. J. A. BUCHANAN, who furnished the facts and account of post-mortem examination.

Age 39; early history that of dissipation and confirmed intemperance, with recent attempt at reform but partially successful.

At 11 P.M. was seized with headache and vomiting of undigested food, soon after which fell into deep sleep, followed, after slight revival, by convulsions, and subsequent paraplegia, patient evacuating urine and feces involuntarily; pulse sixty, feeble, and intermittent; respiration sighing. Death occurred 11¼ A.M. of the following day, immediately previous to which pulse rose to 160 per minute.

On Thursday morning, March 26th, at 9 A.M., assisted by Drs. Richie and Andrews, I made a *post-mortem* examination. The *cranial cavity* was opened, and the vessels of the right side were found turgid, but the membranes of the left side were completely separated from the cerebral substance; large black clots occupying the interval. When the membranes were opened the blood forced itself out, I suppose, about two wineglassfuls. Upon removing the brain, we discovered, what before had not been suspected, a large abscess in the middle lobe, left side, and inferior surface. The abscess had discharged itself, leaving a cavity with walls of softened brain tissue, which would have contained the small end of a duck egg. There was also a quantity of blood and pus mixed together.

Thorax.—The *heart* was apparently normal, the left auricle and ventricle being quite empty; the right side was filled with a large black clot. The *left lung* was closely bound down to the costal pleura with broad firm bands of lymph, the supposed result of an abscess of the lung in childhood. The right lung appeared to be in a healthy condition.

Abdominal cavity.—For some years the patient had been suffering from what he supposed to be dyspepsia; the *stomach* was found to be in a normal condition. The *liver*, however, almost filled the entire abdominal

cavity, and impinged considerably upon the thoracic cavity by pressing against the diaphragm; it extended below the umbilicus and pressed upon the left lateral walls of the abdomen. It is hard, cuts crisply, and has the characteristic appearance of that organ in those addicted to the use of alcohol. There are several tumours along the inferior edge, of a syphilitic character.

Instruments for Removal of Portions of Tumours, Muscular Tissue, &c. during Life for Purposes of Diagnosis.—Dr. KEEN exhibited four trocars intended for the above purpose, as follows:—

Fig. 1.

Fig. 2.

Figs. 1 and 2 show Duchenne's trocar. It is introduced closed (Fig. 2), then opened (Fig. 1), by drawing back with the thumb the lower button seen on the handle, and then closed again, thus grasping a small portion of the tumour or muscle in its cavity. On withdrawing it, the portion removed may be examined by the microscope.

Fig. 3.

Fig. 4.

Figs. 3 and 4 show Dr. Noeggerath's trocar. It is introduced as a sharp canula (Fig. 3), the central stem is then thrust down, protruding two small branches of a forceps armed with teeth (Fig. 4), which grasp a portion of the part to be examined. By the central stem the forceps are now withdrawn within the protecting canula. The whole instrument may now be removed, the forceps protruded, and the part removed in its grasp examined; or, better still, while retaining the canula in the tumour, the central stem and forceps may be entirely withdrawn through the canula with whatever it may have grasped. If this fragment is not satisfactory, the central portion may be reintroduced, and by changing the direction of the canula, without withdrawing it, a portion may be obtained from another part of the tissue to be examined, and so on till all parts are examined, or the same part repeatedly.

Fig. 5.

Fig. 6.

Figs. 5 and 6 represent a trocar made on a model brought from Paris to Messrs. Tiemann & Co. The original was made by Matthieu, but the name of its originator is unknown. It is introduced closed (Fig. 5), and then the trocar is protruded till its neck is uncovered (Fig. 6), when a piece of the tissue to be examined it was hoped would fall into the orifice thus exposed, and be cut off on its retraction within the canula.

Figs. 7 and 8 represent another trocar made by Messrs. Tiemann & Co. for Dr. Drescher. It is introduced as a sharp canula (Fig. 7), and then the hooked trocar (Fig. 8) is protruded and withdrawn, hook-

ing a portion of the tissue within the canula. This instrument also has the advantage that its central trocar can be removed and reinserted while

Fig. 7.
Fig. 8.

the canula remains in the tissue, and thus repeated examinations may be made by a single puncture of the skin and the muscle, the tumour, &c., thus fully examined.

As to their comparative usefulness, I have made some forty experiments with them on the dead body, soon after death, and also when hardened by chloride of zinc, and twice also on the living body.

The last two instruments I have found almost worthless. Occasionally Dr. Drescher's would bring a very small fragment of tissue, but it could not be relied on. Besides that it is very liable to break if the tumour be hard—an accident which happened to me on the third trial with it. Its advantage is its very small size. The third instrument is wholly worthless. I was never able to obtain with it the slightest particle of tissue. Duchenne's and Noeggeraths's are both good instruments, and reliable in every way. Both have the inconvenience of being so large as to inflict a more serious wound than patients will generally allow for simple diagnosis, and to require either general or local anæsthesia for their use. Moreover Noeggerath's, in case it encounters hard tissue, may have its forceps broken. But it has the great advantage of allowing repeated and thorough examination of every part of the growth by a single external wound, whereas Duchenne's must be withdrawn with each fragment obtained.

The importance of these little instruments is evident. What the exploring needle and exploring trocar are to tumours with fluid contents, these are to tumours with solid contents, to muscular tissue in a state of degeneration, &c. The diagnosis of the character of the local change, of the presence or absence of any cerebral, spinal, or nervous lesion, so far as may be ascertained by the state of the muscles, of cases of paralysis, trichina, hypertrophy, &c., may evidently thus be made with a certainty heretofore unknown, and the treatment wisely and not blindly carried out.

April 22. *Blood of a Suicide by Prussic Acid.*—Dr. J. H. PACKARD presented a specimen of the blood of Geo. S. Twitchell, Jr., who terminated his life by taking hydrocyanic acid. The blood was not coagulated. Dr. Packard stated that he was present at the post-mortem examination, and that on opening the body, a decided odour of prussic acid was exhaled.

It being voted that a committee be appointed to examine this blood and report upon it, the chair appointed Drs. W. W. Keen and H. B. Hare, who submitted, May 13th, 1869, the following report, with experiments.

Report.—The Committee to whom was referred for examination the specimen presented by Dr. Packard (viz., a bottle of the blood of Geo. S. Twitchell, Jr., who poisoned himself at about 3 A. M., April 8, 1869) beg leave to report as follows:—

"The blood was carefully examined the same evening, at from 10 P. M. to 1 A. M., *i. e.*, 19 to 22 hours after death, and at various intervals thereafter. The specimen had been removed from the body at about 4 P. M.

Colour: When compared with an ammonical solution of carmine it

presented but little difference save that it was somewhat more dull and opaque. On examining it by daylight the next morning and comparing it with the carmine, the blood was considerably more of an orange tint.

Smell: None was perceptible.

Fluidity: It was perfectly fluid, so that a number of persons wrote various sentences from time to time with perfect ease. It never coagulated.

Blood crystals were obtained with the greatest ease in the usual manner and of no unusual appearance.

Hæmin crystals were easily obtainable also by evaporation to dryness and then boiling with acetic acid (glacial). These were obtained both before and after decomposition.

Microscopic examination.—Five different specimens were examined, from both the superficial and the deeper layers with and without shaking.

Red corpuscles were normal in size, *i. e.*, slightly over $\frac{1}{3000}$ inch. Some few were crenated. When in thick layer they showed a marked tendency to the formation of rouleaux. On the addition of water they paled and became invisible to the highest power we used, *i. e.*, one-fifth. By 10 P. M., Saturday, the red corpuscles were nearly destroyed.

White corpuscles.—But few were found singly. Frequent collections, composed of from three to ten, were visible, the nuclei being indistinctly marked. Many of the corpuscles seemed to be losing their defined outline, as if disintegrating. Besides those collections of recognized white corpuscles were others which we regarded as aggregations of disintegrated white corpuscles. They varied in size from three to fifteen times that of a white corpuscle. Their outlines were irregular, and the whole mass appeared to consist of granular matter, in some instances so arranged as to present a radiating appearance. This was most marked when they were slightly out of focus. They were very adherent to the glass, pressure sufficient to cause rapid movement of the red corpuscles not altering their position. The granular margins, however, swayed to and fro, sometimes losing small fragments. In colour they resemble white corpuscles precisely. Some of the masses possessed a relatively darker centre, resembling a nucleus of varying shape and without defined outline.

Chemical examination.—Heat applied to the blood produced instant coagulation of the albumen. No test for HCy showed its presence, nor was anything worthy of note observed.

In order to throw, if possible, some further light upon the matter, we made a number of experiments, as follows:—

Expt. 1. After examining healthy rabbits' blood, as a standard, April 15, at 7.44 P. M., we injected under the skin of the back of a small young rabbit $\frac{1}{2}$ gr. of cyanide of potassium. 7.46 P. M., slight convulsions; fell on its side; pupils markedly enlarged; breathing very rapid; opisthotonos. 7.48 P. M., died, gasping, in convulsions, the urine being forcibly ejected; pupils contracted just after death and then dilated again gradually.

The body was immediately opened and slight peristaltic action of the intestines was seen. It was readily excited by the touch. Heart perfectly still, save rhythmical twitching of the distended right auricle 160 times in the minute; right ventricle slightly contracted; left ventricle firmly contracted; both ventricles empty. None of these last three could be excited by mechanical means. 8.08 P. M. Blood drawn in a wineglass perfectly fluid. 8.20 P. M. Blood perfectly coagulated, and probably had been so

for some time. No peculiarity was noticed either in colour, smell, or by microscopic examination. 11 P. M. Rigor mortis noticed, but probably present long since.

Expt. 2. April 15, 10.51½ P. M., injected ⅔ gr. cyanide of potassium under the skin of the back of a rabbit. Before he could be released he was in convulsions. Released, he jumped six or seven times, and fell over again convulsed. 10.55½ P. M. Died in the same manner as the first, in all respect saving the voiding of urine. 11.50 P. M. Rigor mortis beginning. Desiring to put this blood as nearly as possible in the exact condition of Twitchell's, the rabbit was not opened till noon of the 16th of April. The blood was then perfectly coagulated in the heart, distending only the right auricle. Under the microscope the white corpuscles were beginning to disintegrate, and they were grouped in masses of 3, to 6, and 7, resembling those in Twitchell's blood, but not quite so much disintegrated.

Expt. 3. To test the effect of cyanide of potassium in blood out of the body.

April 22, 5 P. M., killed a rabbit and drew ʒij of fresh blood immediately into each of four cups as follows: Cup No. 1. Pure blood clotted in five minutes. Cup No. 2. Added in two to three minutes before coagulation had taken place ʒj of water containing potass. cyan. gr. ijss. Soon afterwards it had clotted in small clots, not in a uniform mass. Colour more florid than No. 1. Cup No. 3. ʒj of water with gr. ijss cyanide of potassium were placed in the cup before the blood was drawn. Did not coagulate; colour florid, like No. 2. Both of these were stirred in mixing. Cup No. 4. gtt. v of water containing gr. ⅕ potass. cyan. were placed in the vessel, and ʒij of blood added. Almost the whole of it clotted, the clots varying greatly in colour; some few bright red, others darker red.

April 23, 9 A. M. Observed all the cups. The clots were in the same condition as the night before, but the colour was very different. Nos. 1 and 4 were bright red from oxidation. Nos. 2 and 3 dark red from non-oxidation. No. 4 had black clots intermixed with its brighter parts. Nos. 2 and 3 were dark throughout.

Thinking that the alkali of the cyanide of potassium might have rendered the blood fluid we tried

Expt. 4. Rabbit killed with 10 ♏ of acid. hydrocyan. (U. S. P.) ʒij blood drawn in a wineglass clotted in three minutes, of a dark colour.

Two drachms more were added to ʒj acid. hydrocyan. (U. S. P.) and yet coagulated. The next morning both were, however, so dried that the question of oxygenation could not be determined.

Expt. 5. Rabbit killed with 3 ♏ acid. hydrocyan. (U. S. P.)

Blood drawn in a wineglass coagulated within seven minutes, dark coloured. Ten hours later it was oxygenated to a considerable degree.

Expt. 6. Rabbit killed by 2 ♏ acid. hydrocyan. (U. S. P.) Blood coagulated and oxygenated as before.

Expt. 7. Rabbit killed by 2 ♏ acid. hydrocyan. (U. S. P.) Blood was drawn (ʒiij) in a wineglass, very dark coloured, and was mixed with acid. hydrocyan. (U.S.P.) f.ʒj. In four minutes it was coagulated. Ten hours afterwards it had brightened in colour, but not quite so much so as the last two specimens. The clot had this peculiarity that the crassamentum and serum never separated, but it remained a solid clot.

The first point naturally suggested is whether the HCy interferes with the detection of blood or blood stains. Emphatically it does not. It

could be recognized before decomposition or even when dry (as Dr. J. G. Richardson of this city has recently shown) by the red blood corpuscles, after decomposition by hæmin crystals, or by the blood crystals or by the spectroscope. Specimens of the hæmin crystals and blood crystals are herewith shown, the latter prepared by Dr. R. W. Hargadine.

The spectroscopic analysis has been investigated by Stokes, and more lately by Preyer. (*Die Blausaüre*, Bonn, 1868, analyzed in the *Glasgow Med. Journ.*, Nov. 1868, p. 70.) When hæmatoglobulin dissolved in water is mixed with KCy or HCy and raised to blood heat or allowed to stand for some time, the absorption bands of oxyhæmatoglobulin are replaced by a single broad band. Probably a combination of the two takes place without loss of oxygen, for a reducing agent replaces this with another spectrum and admixture of air causes this to return to the broad band. It might be supposed then that the cyanide destroyed life by such a combination which would destroy the oxygenating power of the red blood corpuscles. This is apparently confirmed by Expt. 3, where the blood mixed with KCy remained black, no oxygenation taking place. Lecorché and Meuriot (Etude phys. et thérap. sur l'Acide Cyanhydrique, *Archiv. Gén.* May, 1868, p. 539) state the same fact and note that it requires a strong current of oxygen to reproduce the red colour of oxygenation.

But the objection to this view of the poisonous action of HCy is a fatal one, viz., that the spectroscope detects in the blood of persons and animals poisoned by HCy, where no air is added no such bands as those of the compound of the acid with the oxyhæmatoglobulin, but only those of hæmatoglobulin without oxygen save in faint traces. If air is admitted then the blood is oxygenated, the bands of oxyhæmatoglobulin appear and the blood becomes of a bright red. Unfortunately we were unable to make any such spectroscopic test, and must simply state therefore the results of others.

So far as the colour, however, shows oxidation, the bright red colour of Twitchell's blood, a common appearance, according to Casper, and the reddening noted in Expts. 5 to 7 confirm this view.

The combination of the acid with the blood probably accounts also for the absence of the odour of HCy in the blood. In the tissues it is observed, but in the blood it is not. This was so in Twitchell's case, in all the experiments made by us, and is so stated by Preyer, and Lecorché and Meuriot. But though deprived of its odour the cyanide of oxyhæmoglobulin is none the less fatal, and after death the odour is exhaled freely by the tissues. (Preyer in *Glasgow Med. Journ.*, Nov. 1868, p. 74.)

Lecorché and Meuriot state also that the blood in such cases resists decomposition longer than usual (p. 541.)

As to the coagulation of the blood in cases of poisoning in man, no absolute rule can be stated, but more commonly it is fluid. Guy (*Forensic Med.*, p. 579) says the blood, "though usually fluid, is sometimes coagulated." Taylor says it is "dark coloured and liquid." (*Med. Jurisp.*, 8th edition, p. 147.) Casper says it is always fluid. In animals, however it may be in man, our own experiments would go to show the reverse. Twitchell's blood never coagulated. But, on the other hand, in all six of the rabbits poisoned by us, whether by KCy or HCy, the blood coagulated in a few minutes. When mixed with KCy artificially out of the body (Expt. 3), it required a large amount of the acid to prevent clotting, and this too to be added before any coagulation had taken place, otherwise it was of no

avail. But when mixed with HCy out of the body in the same proportion it clotted, even when the animal had been poisoned by HCy. (Expt. 4 and 7.) With these discrepancies we can add no light on the subject, either as to the facts or the cause of the frequent though not invariable fluidity of the blood.

The condition of partial disintegration of the white corpuscles found in Twitchell's blood and in Expt. 2, we regarded as probably a post-mortem result in no way connected with the poison. To determine this we have endeavoured to obtain blood placed in similar conditions from the bodies of persons dying naturally, *i.e.*, blood taken from the body about twelve hours after death and examined some eight or ten hours later. Our inability to do this was the reason of our not reporting at the last meeting of the Society. But though still unable to obtain such specimens, we have thought it advisable, even though incomplete in this respect, not to delay our report any further.

Preyer states that atropia is an antidote to the poison. One of us has made a number of experiments on this subject, and although not within the province of pathology, yet we may be pardoned for saying that in all the experiments made the failure of the antidote has been a signal one. (See *Proc. Biol. and Micros. Sect. Acad. Nat. Sci.*, for June, 1869.)

In connection with this report, the following summary of other post-mortem appearances than those of the blood, taken from the works of Taylor, Casper, Guy, and Christison, may prove not uninteresting, although the amount of the poison taken, the interval between its reception into the system and the fatal result, as also the time elapsing between the death and the post-mortem examination, while they have a most important bearing on the subject, unfortunately and of necessity have varied so greatly, that it is almost impossible to form any just conclusion as to what may be expected as post-mortem results after poisoning by hydrocyanic acid.

Rigor mortis is usually fairly marked after the fifth hour succeeding death, but not unfrequently it has not been observed at all.

Putrefaction is said to take place somewhat more rapidly than after death from other causes, but Mr. Taylor thinks not, Orfila having shown that all sudden death, *cæteris paribus*, is followed by rapid decomposition. Lecorché and Meuriot state that the blood decomposes more slowly. The skin is commonly livid or tinged with violet, the nails blue, the fingers not unfrequently clenched, the toes contracted, eyes prominent, glassy and glistening, the pupils dilated.

As a rule there is after death no evidence of the previous occurrence of convulsive movements, even when in the act of death these may have been present.

On opening the body or any one of its cavities, in many cases the peculiar odour of hydrocyanic acid has been observed, though by no means invariably. It appears that when death has followed the administration of the poison very rapidly, the odour may be discovered on first opening the body, even several days after death. Where, however, death has been delayed more than fifteen minutes, it has been almost or quite impossible to perceive the odour, even when chemical tests have afterwards revealed the presence of small quantities of the acid. Two causes influence this result, probably, one, that the elimination of this poison being exceedingly rapid, every moment of time aids its escape from the body—the other, that death usually follows large doses much more rapidly than

when small ones have been taken—and hence the body contains more poison after the sudden death.

That the odour has not been perceived is no proof of the absence of the poison. It is certain that many persons cannot perceive its presence in the atmosphere, their noses being as it were "*odour* blind," and besides, as before stated, not unfrequently the acid is present in the body while no odour can be perceived by any one. On the other hand, there are several substances, themselves free from hydrocyanic acid, which resemble it very closely as regards odour, so that the presence or absence of this, taken alone, should have but little influence in a medico-legal investigation.

It seems agreed that there is usually an engorgement of the venous system, in which, however, the vessels of the brain do not invariably share, as, while Casper gives as a rule (*Forensic Medicine*, vol. ii.) that there is *always* hyperæmia of the cranial contents, four out of the five cases quoted by him show a decided *anæmia* of the vessels of the brain and meninges.

The arteries are usually empty; as is the left side of the heart, which is found contracted. The right side of the heart shares the engorgement of the venous system. *The lungs* vary in condition from great congestion, which is somewhat rare, to a condition of anæmia. The stomach, which is generally found to emit a stronger odour than any other part of the body, has at times, after an usually large dose, presented some evidence of slight inflammatory action. There is a general congestion of the abdominal viscera.

The *bladder* is sometimes found full, sometimes empty, and this condition has not been shown to be influenced by the amount of the poison taken.

Those members of the Society who may have occasion to make examinations in cases of poisoning by hydrocyanic acid, should bear in mind the fact, that inhalation is the most dangerous form of administration, and that the odour has been on more than one occasion so strong, as to seriously affect some of those present.

It should also be remembered that the volatility of the poison is so great, that all specimens which it may be necessary to submit to a chemical investigation, should be very thoroughly secured from access to the air, and be examined as soon as possible.

W. W. KEEN,
H. B. HARE, } Committee.

Hemorrhage on Floor of Fourth Ventricle, with Laceration of both Hemispheres of the Cerebellum. Fibroid Tumors of Uterus and Ovaries.

Dr. HARGADINE exhibited the specimens, from a German woman, aged 72, who had been admitted to St. Mary's Hospital, October 22, 1868, with a large carbuncle in right lumbar region, from which she had completely recovered. About 8 A. M., of April 21, 1869, while walking across the floor, she fell, but arose and attempted to walk, when she again fell. In a few moments she became insensible, with pupils small, respiration stertorous, pulse hard, bounding, and somewhat frequent. There were twitching of the left eyelid, and convulsive movements of the legs. Death ensued in ten minutes after the first symptoms appeared.

Post-mortem, 12 hours later.—On opening the membranes of the brain, at least a pint of blood gushed through the opening. The vessels on the surface of the brain were congested, and there was considerable effusion beneath the arachnoid, especially under the cerebellar portion. Much

serum was also found in the lateral and third ventricles, and the substance of the brain was soft. The hemorrhagic effusion had taken place principally in the fourth ventricle, producing extensive laceration of both hemispheres; the largest cavity, in the right lobe, was as large as a hen's egg. The cause of death is here apparent.

The *veins and right side of the heart* were distended with fluid blood. The *heart* was small, its cavities but little more than half the usual size, while their *walls* were thickened. There was calcareous deposit upon the *valves* and throughout the *arterial system*, especially in the aorta below the diaphragm. It was also noticeable in the splenic, superior mesenteric, and carotid arteries at base of brain. The *lungs* were emphysematous, the *liver* and *kidneys* decidedly fatty. Other organs healthy, except uterus and ovaries.

The former was small, and protruding from the os was a small fibroid polyp with its attachment to the fundus. On each side of the fundus, at the orifices of the Fallopian tubes, two small tumours were noted, presenting an external fibrous covering inclosing a calcareous nucleus. On the *right ovary* was a fibroid tumour, glistening white in appearance, very hard, and about *six* lines in diameter. A smaller one was found on the left ovary, also with a calcareous nucleus. The microscopic examination of these tumours showed a network of fibrous filaments with great numbers of nucleated, oval, and round cells.

Myomata of the Uterus, Broad Ligaments, and Ovaries; Calcareous and Suppurative Degeneration.—Dr. TYSON presented the specimen for Dr. JOHN NEILL, who furnished the following history:—

The tumour is from the womb of an unmarried lady, 58 years of age, who had been riding out and eating heartily until five months ago.

The tumour, as the family called it, was noticed fifteen or twenty years ago, and many of our most eminent practitioners advised her to think nothing of it, but to maintain her general health. It increased very gradually in size, and at her death was not more than six inches in diameter.

She had been under my care only during the last four or six weeks, and suffered but little local disturbance—occasionally pain down the left limb—though increasing, so that for the last three weeks she was confined to her bed from inability to move rather than from pain. Her skin was yellow, and when I first saw her she had vomiting and diarrhœa, which were, however, quite controllable. But her most prominent symptom was the loss of appetite, and complete disgust for food. She died from inanition, and within a few days previously to her death had a distressing, irritating cough.

When I opened the abdomen, twenty hours after death, there was no distension of the intestines. The omentum was quite adherent to the front of the uterus. This seemed of the same size as recognized during life. The surface was irregularly covered with patches, nodules, and cysts, containing mostly greenish, fetid pus. The uterus was impacted in pelvis, and adherent to additional morbid growths, originating apparently in the broad ligaments. Many of the growths were extremely rough and dense, such as the ovary, which is presented. These roughnesses were limy and hard to cut. A portion of the uterus is also exhibited. When I cut or dug it out I opened several loculi or sacs containing greenish pus. The walls were extremely hard, infiltrated with lime.

In addition to its morbid-anatomy interest, the case gives several interesting points in its history:—

1. Its long duration and little inconvenience until recently (which she attributed to the tumour having been elevated by an India-rubber bag).
2. No constitutional disturbance.
3. No interior discharge, no blood, pus, or any offensive flow.
4. The formation of pus, or rather the degeneration of solids into fluids in some places, with but little chill, or creeps, and no fever.

Microscopic examination by Dr. Tyson showed the tumours to be fibrous myomata, which in their points of stony hardness had undergone calcareous degeneration. The contents of the cysts were purulent.

Acute Pericarditis.—Dr. S. WEIR MITCHELL presented the specimen and gave the following history:—

I. C., æt. 14, female, had typhoid fever in January, 1869; apparently well to date of March 28th, when she had a chill early in the morning, a second at noon on the 29th, and several on the 30th, when I saw her. There were no pulmonary lesions; but at the apex of the heart could be heard a loud friction sound, and at this spot there was intense pain; pulse 128; skin hot. About the 4th day, on listening, I heard a double sound at the base, which I supposed might be valvular, but was of dubious origin. These sounds increased in intensity up to death, or near it. The pain was constant and agonizing, and there was no doubt as to the presence of pericarditis. On the 8th day there were distinct evidences of sudden consolidation of the lower third of the left lung, with previously slight cough and a little bloody sputa. On the 13th day she was to appearance much better and stronger, asked for food, and wished to lie down flat, which she had hitherto been unable to do. About 4 P. M., the nurse lifted her out of bed, and while on the commode, she gave a sudden cry, exclaimed, I am dying, and was at once put on the bed. At this time her sense of oppression was terrible; the pulse countlessly rapid, and her cries piteous. She died rather suddenly with a slight convulsion at 7 P. M.

Post-mortem twenty-four hours later.—The liver was slightly enlarged and congested, but no organ was diseased excepting the heart. This organ was hypertrophied throughout, and probably owed a large share of this increase to the effects of her fatal illness. The entire surface of the cardiac, as well as of the reflected pericardial membrane, was covered with numberless fringes and flakes of false membrane so as to leave scarcely any of the natural surface bare. There were about two ounces of water in the pericardium. The sudden death was due in all likelihood to the clots which filled both sides of the heart, but were in the right ventricle and pulmonary artery nearly white, and elsewhere much darker. The valves were healthy. The Committee appointed to examine microscopically the tissue of the heart, submitted the following:—

Your Committee appointed to examine the tissue of the heart, presented at the last meeting of the Society by Dr. S. Weir Mitchell, would report, that microscopic examination showed the muscular tissue throughout the entire thickness of the heart's walls to have undergone a certain amount of granular change. It seemed, also, from several comparative examinations, that the external layer of muscular fibres, immediately beneath the inflamed pericardium, presented a much higher degree of this degeneration than the deeper layers.

WILLIAM PEPPER,
JAMES TYSON, } Committee.

Cystic Hemorrhage; Cancer of the Prostate; Death with Uræmic Symptoms.—Dr. TYSON exhibited the specimen for Dr. EDW. HARTSHORNE, who furnished the following history:—

The patient in this case was an unsatisfactory subject of observation, although an intelligent man, as his nervousness and inclination to temporize and resort to irregular practice kept him frequently out of the reach of proper surgical attention. His unusual restlessness, also, and apprehension under suffering, together with a strongly plethoric habit, rendered his paroxysms especially severe and difficult to manage.

The first attack of retention, so far as I could ascertain, occurred about ten years before his death. It must have been a serious one, as the first surgeon called to him—an expert operator, now dead—failed to relieve him after having subjected him to great suffering, and, as he always insisted, produced a false passage, which a more successful surgeon on the same occasion had the good fortune to avoid. I attended him in his second attack, two years subsequently and about eight years ago. On this occasion the bladder was greatly distended and the whole prostatic region, including the outlet of the rectum, was evidently very much congested. I had great difficulty in getting a catheter into the bladder, but finally succeeded with a medium-sized silver instrument, becoming satisfied of the existence of the false passage of which the patient himself complained. In the course of the treatment following this operation I gradually taught him to catheterize himself from time to time; and thus enabled him to escape a good deal of the trouble to which he would otherwise have been liable with the progress of his disease. As a general thing, the difficulty in catheterizing was never great in the subsequent paroxysms, except at the beginning, and was not often serious or decidedly embarrassing, even then. In fact, the patient nearly always managed to relieve himself. Although the "hitch" of a false passage was often noticed during his earlier attacks, it ceased to be thought of in the later, and yet may have interfered more seriously than we were led to believe, notwithstanding the comparative ease with which the instrument was employed, except when obstructed with blood. The enlargement of the prostate was not so perceptible on the side of the rectum, although there was a considerable tendency to hæmorrhoidal irritation and congestion. He also suffered from a liability to inflammation of the left testis, having been repeatedly obliged to take to his bed on account of it.

The different complications were often aggravated by his active habits, and especially by the frequent long railroad journeys in which his business led him to engage. The morbid conditions gradually gained upon him, notwithstanding considerable treatment and more or less constant precautions, in diet and regimen, until he had an attack of hemorrhage, four years ago and six years after the first retention. The blood was passed at first in small quantities and more or less mingled with urine, but soon accumulated in the bladder and coagulated to such an extent that it could not be withdrawn through the catheter in any manner or through any expedient whatever. We only succeeded by letting it alone, having reduced the general plethora, and keeping the patient under the influence of anodynes until the urine had time to liquefy the coagulum and thus to enable us to evacuate the distended bladder. Under this quiescent treatment the patient recovered his ordinary health, the only addition, after the hemorrhage had ceased, to his regular and careful catheterism, being the washing out of the bladder, one, two, or three

times a day, with small quantities at a time of tepid water through the ordinary large-eyed silver catheter, and from a two-ounce vulcanite syringe. Astringent injections were sometimes tried, but were never persevered in, as they appeared to give pain without any compensating advantage. The patient himself was led to adopt the small syringe and the divided injections as decidedly more agreeable and useful than the more copious drenchings sometimes resorted to. At the same time he very soon abandoned, with my entire acquiescence as to both matters, the use of the double catheter. In this practice our experience coincided exactly with that of Sir Henry Thompson, which he has so clearly illustrated in his admirable clinical lectures. I am satisfied from observation of this and other cases that the small syringe, with a long nozzle, and an ordinary catheter—especially a flexible one—make the best combination for the purpose of injecting or washing out the bladder. And I have been much gratified at finding the conclusion so well sustained and justified by the theory and practice of one whose authority on these topics is certainly as high as that of any surgeon of our day.

Some two or three attacks, of shorter duration and minor severity, followed the first hemorrhage at intervals of from one to two years. Pains in the back were complained of from time to time, especially in the course of the exacerbations, but no other special kidney symptoms of any kind were noted. Nor was anything found in the urine by chemical tests or microscopical examination that would justify the apprehension, often felt and expressed by us, of structural degeneration.

The habit of our patient, however, of relying upon himself and rather avoiding regular surgical aid, except in great emergency, prevented frequent examinations of this kind; so that no report can be given of the condition of the urine as indicative of the changes in the kidneys for at least a year if not eighteen months before his fatal illness.

The fatal attack began, or rather got beyond his control, on the nineteenth of last March, with a hemorrhage which amounted to as much as a pint of blood passed at one time from the bladder. This was followed by smaller evacuations, more or less diluted with urine, expelled with and without the assistance of a flexible catheter, and gradually subsiding in the usual manner.

Within five days he was out of the house and again beyond my reach. Some imprudence in driving out of town, and walking over rough ground, notwithstanding my often repeated warnings, brought on a renewal, before his convalescence had been established and with greater violence, on the first of April, within ten days of the onset of the attack. Unusual irritation set in; more blood appeared, to the extent of not less than a pint and a half at different times. The bloody urine soon began to be drawn off with difficulty and in smaller quantities, and was evidently accumulating in the bladder as the distension and discomfort steadily increased. He grew weaker also, and more nauseated. These symptoms, local and general, varied from time to time, but the actual progress was in the wrong direction. The limited amount of fluid that could be drawn from the bladder gradually appeared to be blood with little or no urine, and grew more and more fetid, while the distension of the bladder became more decidedly evident, although he ceased to complain of the uneasiness except on pressure. Drowsiness began to affect him; occasional wandering of the thoughts and mutterings were noticed, with sensations of nausea and faintness and a sinking

pulse. Uræmia was gradually overwhelming his brain and destroying his only chance of recovery. No blood could be drawn in any quantity, even with the syringe, on account of the clogging of the catheters; and no urinous odour could be detected in the little that was obtained. Saline diuretics had been freely used but without apparent effect; and anodynes appeared to be less needed on account of the hebetude due to the probable toxæmia, or at least accompanying the complete retention of urine. On the evening of the fifth day of his relapse, and after not less than forty-eight hours of continuous distension of the bladder with blood and the entire absence of urine, he took a teaspoonful of oil of turpentine in a tablespoonful of castor oil. During the night his restlessness increased and his mind cleared up considerably, if not entirely, without any aggravation of the local uneasiness or any pain in the kidneys. In the morning, however, he was suddenly attacked with a violent chill, which seemed to produce great agitation of mind as well as body, and under which he rapidly passed into a coma and then gradually sank, the chill lasting forty-five minutes and being followed by death in nine hours. Throughout this attack, and the most serious of the others, Dr. Hartshorne had the advice and assistance of Dr. Thos. Stewardson, of Philadelphia, who, as an intimate friend and constant associate, had him more frequently under observation during his intervals of comparative health. Dr. John Neill, also a frequent companion, was in consultation with us during the final paroxysm.

Post-mortem by Dr. Jas. Tyson in presence of Drs. John Neill and Ed. Hartshorne twenty-four hours after death.—The body having been eighteen hours in ice.

External aspect that of a healthy, robust man, with a considerable but not excessive development of fat. The countenance unusually natural, and rather florid than otherwise, without being flushed; no trace of jaundice or anæmia being present.

No tympanitic distension of abdomen, but some elevation in the pubic region extending nearly to the umbilicus and reaching three inches on each side of the middle line. This elevation could be felt to be due to an oval or pear-shaped tumour which was hard and dull on percussion on each side, but resonant and somewhat less tense in front.

A crucial incision of the abdominal walls uncovered this tumour, and showed it to be the bladder, as expected. It was distended with a fluid except in front, this space in front, to the extent of about four inches in width by five in length, being occupied with gas, and hence resonant on percussion. This peculiar resonance above the pubis had been remarked during the last forty-eight hours before death.

The peritoneum was somewhat injected in patches, and generally congested to a slight degree. About two fluidounces of sero-purulent fluid, which could not be traced to its source, escaped on the left side just below the left kidney, but did not appear to come from the kidney or its ureter. The bladder was found to be a thickened sac, reaching five inches above the pubis towards the umbilicus, by six inches in width and five inches in depth, four-fifths of its cavity being occupied by at least three pints of purple, semifluid and very fetid blood, which must have been without admixture of urine in any quantity, there being not the slightest ammoniacal or other urinous odour. External, under the peritoneum, the bladder was somewhat congested in patches, and mottled in portions with a purplish discoloration which was supposed to be the result of

post-mortem discoloration. On the middle of the right side was observed a circumscribed projection or pouch-like elevation in irregularly circular nodules, purple in colour and resembling a choroidal staphyloma on a large scale—evidently a triple sac or pocket such as are met with in these cases of frequent or long-continued retention of urine.

The bladder was then carefully removed along with a portion of the urethra, and retained, after evacuation, for a further examination, under more favourable circumstances.

The left kidney was imbedded in a large amount of fat; it was quite flabby and decidedly enlarged, being six inches long by from one and a half to two in breadth. Its capsule was thickened, tearing off easily and being ecchymosed in patches throughout its internal surface.

Externally this kidney was everywhere congested, mottled in colour, granular and evidently fatty. Longitudinal section through the back showed the cortical structure to be thinned and the tubular generally pallid, although congested in portions and fatty, with strongly marked engorgements or vascularity around the cones.

The infundibula, calyces, and pelvis were all dilated. The pelvis would have held at least two fluidounces of fluid. Its lining membrane was congested in arborescent patches. The ureter was dilated to three quarters of an inch in diameter; vascular and thinned in its walls.

The right kidney was also imbedded in fat and enlarged and flabby, being six inches in length by from two to two and a quarter wide. Its capsule was thickened and vascular and easily detached. The cortical structure was thinned, grayish and fatty. The tubular structure was mottled or pallid and congested, the vascularity being strongly marked. The pelvis and ureter also of this side were dilated, thinned, and arborescently congested, the diameter of the ureter being one third of an inch.

The following description of the specimen and of the minute structure of the tumour is by Dr. Tyson:—

"The bladder was laid open superiorly in the median line. The interior presented a markedly vascular appearance, the veins being greatly enlarged. Throughout a large extent of the internal surface, but especially in the base, the mucous membrane was perforated by ulcers of varying size and irregularity, but sharply cut, as though the tissue was punched out, down to the floor of the external coat. While at the right lateral and inferior portion, the three coats of the bladder had been perforated or ruptured, evidently immediately before death, permitting the passage of fluid matters into the pelvis, and accounting for the symptoms of collapse which supervened at this time.

"Most interesting, however, was the condition of the prostate gland, which was substituted in the seat of its middle lobe by a large spherical mass, three inches in diameter, which projected into the cavity of the bladder. The prostatic portion of the urethra was abundantly permeable to admit the passage of an index finger, but from the floor of the urethra in this point starts a false passage an inch and a half or more in length, the source of the difficulty in entering the bladder. The structure of this tumour is clearly cancerous, being made up of a fibrous stroma, in some situations abundant, in others almost entirely absent, filled with cells of varying size and shape from the columnar uni-nuclear cells, resembling those lining the urethra, to huge multi-nuclear cells, in some instances $\frac{1}{500}$th of an inch in diameter, and containing as many as six nuclei. These cells

in some situations where the matrix was least abundant constituted almost the only element, giving a medullary character quite characteristic."

The amount of structural alteration of the *kidney*, although not greater than might have been expected in such a case, and perhaps not much more than we had really apprehended, was nevertheless remarkable, considering the comparatively good ordinary health of the patient during his intervals of exemption from critical attacks. He complained of dyspeptic symptoms to some extent, from time to time, and of occasional dizziness, but no more than had been his habit long before he had any trouble with his bladder. He also felt uneasiness about the loins, and this discomfort had been increasing during the latter months of his life with the increasing difficulty in his bladder. Nevertheless he was unusually strong and active for a man of sixty-four years of age, being, as to general appearance, a rather striking example of robust health in all the usual external characteristics. Much of this may have been owing to his very abstemious diet and entire abstinence from fermented or alcoholic drinks, together with constant attention to the state of his bowels, and to a life in the open air. He took very little animal food, consumed a good deal of oatmeal in different forms, and was very cautious in the use of fruits and vegetables. In regard to medication, he was rather too much addicted to dosing, although he rarely went beyond the use of saline mineral water, gentle saline aperients, and castor oil or olive or linseed oil. As might be expected in a man of his plethoric habit, he was often benefited by leeching or cupping to the extent of from ten to twelve ounces of blood taken from the loins or the perineum; and, until the final attack, did not appear to suffer very seriously from his cystic hemorrhages. Under the circumstances it is impossible to say when and to what extent albuminuria and other accompaniments of Bright's disease might have been discovered in the urine. I am reminded, however, of a case of which I happened to see the termination, in which general and strongly marked fatty degeneration of heart, liver, and kidneys with excessive anæmia, were ascertained by careful examination after death; and yet Dr. Tyson, who made the post-mortem inspection, was unable to detect either albumen or tube casts or oil-globules in urine which the patient had voided twelve or fifteen hours before death, although he carefully examined it within six hours after its reception.

REVIEWS.

ART. XX.—*The Surgical Treatment of Cancer.*

1. *Clinical Illustrations of Various Forms of Cancer, and of other Diseases likely to be mistaken for them, with Especial Reference to their Surgical Treatment.* By OLIVER PEMBERTON, Surgeon to the General Hospital, Birmingham. London: Longmans, Green, Reader, & Dyer, 1867, folio, pp. xviii., 128.
2. *On the Diagnosis and Treatment of Cancer and the Tumours Analogous to it.* By MAURICE HENRY COLLIS, M. B., F.R.C.S.I., etc. etc. London: John Churchill & Sons, 1864, 8vo. pp. xxii., 317.
3. *On Cancer; its Allies and Counterfeits.* By THOMAS WEEDEN COOKE, Surgeon to the Cancer Hospital, etc. London: Longmans, Green, & Co., 1865, 8vo. pp. xiv. 226.
4. *The Antecedents of Cancer.* By CHARLES H. MOORE, F.R.C.S., etc. London: T. Richards, 1865, Fcap 8vo. pp. xii., 53.
5. *Rodent Cancer, with Photographic and other Illustrations of its Nature and Treatment.* By CHARLES H. MOORE, F.R.C.S., etc. London: Longmans, Green, & Co., 1867, crown 8vo. pp. xvi., 128.
6. *On the Influence of Inadequate Operations on the Theory of Cancer.* By CHARLES H. MOORE, F.R.C.S., etc. (Medico-Chirurgical Transactions, vol. l. p. 245.)
7. *The Continuity of Extensive Cancer.* By CHARLES H. MOORE, (St. Bartholomew's Hospital Reports, vol. iii. p. 133.)
8. *Surgical Cases, Devon and Exeter Hospital.* By PHILIP CHILWELL DELAGARDE. (Ibid., vols. ii., iii., and iv.)
9. *The Inheritance of Cancer.* By W. MORRANT BAKER. (Ibid., vol. ii. p. 129.)

THE tendency of the age, in medical science, is to exalt the importance of microscopical investigation and pathological arrangement, at the expense of clinical study and therapeutic experience. In no department is this more evident than in the modern treatment of the subjects of tumours and surgical cancer. While this tendency is to a certain extent deserving of praise, as aiming to introduce accuracy and precision into our theories, and therefore eventually into our practice, there can be no doubt that the clinical history of morbid growths and their therapeutics yet deserve more careful study than they habitually receive, and still offer a field of investigation which will yield abundant fruit to the careful and earnest labourer.

Hence it is with great pleasure that we hail the appearance of a volume like Mr. Pemberton's, which professedly gives the results of a vast *clinical* experience in the management of a class of affections which must always deeply interest the practical surgeon. We propose to examine Mr. Pemberton's work with some care, and for the benefit of our readers to compare his conclusions with those of other recent writers on the same subjects.

In Chapter I. our author deals with *The Characters distinguishing*

Malignant from Benign Growths. And here Mr. Pemberton honestly confesses at the outset that there is no single symptom upon which the surgeon can predicate the assurance that any particular tumour is innocent or the reverse. "There is no one character which is essential and always to be met with in either of these groups. On the contrary, almost all the characters of the one group may be, and frequently are, met with either severally or collectively in the other. Nevertheless the individuals composing each group may nearly always be identified either by the presence of a certain series of characters which, as that series, are never met with in other groups, or by the degree in which one or all the characters composing the series are present." A good deal of confusion exists as to the precise sense in which the terms *malignant* and *benign* are to be understood. Mr. Paget looks upon *malignant tumours* and *cancers* as identical, and this is likewise the sense in which Mr. Pemberton uses the term; but as pointed out by the late Mr. Collis, many (structural) cancers are not malignant in a clinical point of view, that is, they do not tend to destroy life; while, on the other hand, many non-cancerous growths are, clinically, eminently malignant. Again certain growths, if early submitted to operation, may never return, and might then properly be called benign, while the same tumours, if allowed to run their natural course, or even if untreated until further advanced, would infallibly cause death, and therefore merit the appellation of malignant. Observation of this fact, we may add, has induced many authors to recommend early interference in all cases of cancer, while other writers, such as Mr. Weeden Cooke, would ignore the effect of treatment, and class these cases with those occasionally met with of atrophic cancer, comparing them with the rare but undoubted examples of recovery from tuberculous disease.

We should ourselves prefer, with Mr. Collis, to adopt a structural classifications of tumours, and restrict the application of the terms innocent (or benign) and malignant to a strictly clinical sense; but, as Mr. Pemberton has done otherwise, we shall content ourselves with these preliminary comments, and now follow our author in the path which he has marked out.

Malignant tumours or cancers are characterized by their tendency to infiltrate the part or tissue attacked, by an almost inevitable tendency to soften and ulcerate, and by their proneness to multiply both in the surrounding parts, and in other and remote tissues and organs. The secondary growths are rarely of the same species as the primary. Malignant tumours are further characterized by their proneness to return after removal, by their tendency to involve the neighbouring glandular structures, and by the early development or even antecedent manifestation of the constitutional condition known as cachexia. Finally "the malignant tumours, as a rule, bear but little resemblance, as regards their intimate structure, to any of the natural tissues of the body." The coexistence of all or of a certain series of the above described characters, are sufficient to warrant the designation of any particular tumour as a cancer.

The Characters of the Species and Varieties of Malignant Growths are discussed by Mr. Pemberton in Chapter II. The following are the species in our author's classification: Scirrhus, medullary or encephaloid, osteoid, fibrous, colloid, and epithelial. The varieties are, acute scirrhus, which forms a connecting link with encephaloid, three varieties of the latter, to wit, the firm, the melanotic and the cystic, and one variety of the epithelial cancer, the melanotic. The following is given as a distinguishing char-

acteristic of scirrhus, and is worth bearing in mind: "On section, the tumour on each side of the cut surface becomes distinctly concave—the appearance thus presented is readily observed and must be regarded as a very marked peculiarity, and, as such, eminently suggestive of the true nature of these tumours."

The *firm* variety of encephaloid is said to be "almost identical in appearance with the soft variety of scirrhus [*sic*] cancer" (that which the author has before called the *acute* scirrhus).

Osteoid cancer generally, but not invariably, springs from bony tissue. It is closely allied to the *fibrous* cancer, and, on the other hand, to a form of *encephaloid* which contains bony spicules.

Fibrous cancer "may be readily distinguished from all the other species by the fact that its structural characters are identical in every respect with those of the ordinary benign, fibrous tumours. It has an exactly similar appearance to them on the surface of a section, and when examined microscopically no cancer cells of any kind are to be discovered, nor any free cancer nuclei." This in fact is what Mr. Collis would call a malignant non-cancerous growth.

The *colloid* species of cancer is closely connected with encephaloid, through the cystic variety of the latter.

The most peculiar feature of *epithelial* cancer is its containing "what are termed capsules or epidermic globes. These are met with in no cancers except the epithelial. . . . They are of very large size, being from $\frac{1}{100}$ to $\frac{1}{100}$ of an inch in diameter. They appear to be formed by the juxtaposition of many epithelial cells, so as to form laminæ, and which are rolled round so as to form the walls of a central cavity; in this central space we find a granular matter, cells and nuclei; the cells so included are not epithelial cells, but round or oval in shape, and very similar to scirrhus cancer cells in structure. The nuclei, whether free or inclosed within the cells, also resemble those of scirrhus."

The consideration of *Scirrhous Growths*, and more especially of *Scirrhus of the Breast*, is entered upon in Chapter III. "Regarded in its first origin, scirrhus may be deemed a local malady." In many cases there is no pain until after the disease has existed for months, or even for years. The first sign of constitutional infection is the enlargement of adjacent glands. Of 53 cases in which Mr. Pemberton noted the condition of the glands, in 20 there was no enlargement, in 30 the axillary glands were affected, the subpectoral in 2, and the supra-clavicular in 1 only. Retraction of the nipple, Mr. Pemberton justly considers as a sign of little importance when taken by itself; in connection with other symptoms, however, it may properly be considered an important circumstance in determining the exact nature of the disease. The skin over a scirrhous tumour does not undergo elastic expansion as in the case of encephaloid, but quickly becomes adherent, assumes a violet hue, becomes as it were eroded, and finally ulcerates. The ulceration, which may be either superficial or deep, generally occurs from six months to two years after the first appearance of the disease; occasionally, however, it is a much more tardy symptom. Mr. Pemberton has noted the ages at which scirrhus first appeared in 70 cases; in but one was the patient under 30; in 22, between 30 and 40; in 21, between 40 and 50; in 19, between 50 and 60; and in 7, between 60 and 70. From these statistics it would seem that the popular idea that scirrhus most frequently occurs about the period of the cessation of the menses, is not sustained by fact. Scirrhus is occasionally, but very

rarely, associated in the same tumour with encephaloid. Mr. Pemberton has seen scirrhus in the male breast in four cases, three of which are narrated.

"Of the causes of scirrhus cancer of the breast, very little is known with certainty. Of 48 cases in which I have investigated the early history, 6 were referable to the effects of external violence; 8 were believed to have originated in consequence of breast abscesses, whilst in 34 the disease had appeared without any known cause."

With regard to the effect of hereditary influence Mr. Pemberton finds that in 22 of 70 cases the previous existence of cancer in the family was unknown. In only 6 of the remaining 48 could inheritance justly be assigned as a cause of the development of the disease.

"It appears to occur more frequently amongst the married than the single; for out of 50 cases in which I have investigated this point, 45 were married women, and only 5 single."

With regard to the question of operation in scirrhus of the breast, Mr. Pemberton justly says that no absolute rule can be given. Where the first development of the tumour is accompanied by constant pain, when it grows rapidly, and when there is an early tendency to wasting and cachexia, especially if the patient be under 50 years of age, early extirpation is advisable. Advanced age is no necessary bar to the operation, which is, however, of course more imperative in a young person. In cases where scirrhus is painless, running a slow course, and occurring late in life, it is usually better to avoid operative interference; in fact the surgeon should here, as elsewhere, be cautious not to convert, by treatment, a chronic into an acute disease. There is one contingency, not specially referred to by the author, in which it seems to us that operation is sometimes most urgently called for; this is where a chronic cancer suddenly assumes increased activity, and begins to grow rapidly. In such cases, if other circumstances be favourable, we believe much good may often be accomplished by an operation. Mr. Pemberton forbids excision in any case where the ulceration is extensive, or the pectoral muscle involved. This dictum must, we think, be taken with some allowance. We have had occasion to extirpate a scirrhous breast, where it was necessary to expose the intercostal muscles in removing all the diseased structures, the patient making a good recovery, and there being nothing in her subsequent history to make us regret having performed the operation. Enlarged glands, Mr. Pemberton advises, should be enucleated with the finger, through a simple incision made so as to divide their cellular capsule.

In cases unsuitable for operation, all sources of irritation, both local and general, should be avoided, and the patient's general health maintained by suitable hygienic and other measures. Mr. Pemberton recommends the internal administration of Fowler's solution, the prolonged use of which he has found attended by marked improvement of the health and by a tardy progress of the disease. The application of the actual cautery may be necessary to arrest hemorrhage in the latter stages. The use of caustics as a means of removing the diseased growth is not even alluded to.

It will be observed that Mr. Pemberton by no means favors excision as the *usual* mode of treatment in mammary cancer. His very large experience gives great weight to his opinion. At the same time it is but right to say that other authorities, likewise of large experience, take a somewhat

different view. Without going back to the statistics of Mr. Sibley[1] and Mr. Paget,[2] which are doubtless familiar to our readers, we may say that Mr. Collis, who avers himself a firm believer in the hereditary nature of cancer, yet certainly gives a more favorable view of operative treatment than Mr. Pemberton, who rejects the idea of any hereditary influence. Mr. Moore, well known as a prominent advocate of the "local-origin" theory of cancer, finds from his researches as to the supposed antecedents of cancer, "a valuable argument . . . . . for early operations in cancer, and an argument which corresponds with their comparative success. Whilst yet the first tumour has undergone little diffusion," he says "there is hope of a complete extirpation of the disease—a hope which quickly fades away as the tumour grows." Mr. Delagarde, who believes in the existence of a cancerous diathesis, yet urges early operation, thinking that thus "we may not unreasonably hope for a cure—a cure in so far permanent that the diathesis may not originate another cancerous centre during the remainder of the patient's life." Mr. Weeden Cooke, on the other hand, who, as surgeon to the Cancer Hospital, sees a great many cases in their last stages, which have either been rejected as unfit for operation or in which the disease has returned after operation, says: "In exceptional cases, operation will be justifiable and desirable; but in the great majority of cases, life will be considerably prolonged by abstaining from this proceeding, and by the substitution of those remedial measures which experience has suggested."

In view of this diversity of opinion among those whose opportunities of observation have been so ample, it is with great hesitation that we venture to express our own belief that in cases where it is possible to remove all the diseased structure, an operation is, as a rule, desirable, no matter what the other circumstances of the case may be. All surgeons agree that the operation is attended with very little risk in itself, and we have yet to see any proof, either statistical or otherwise, that complete extirpation tends either to shorten life or to hasten the progress of the disease should it return after operation. We doubt not that there are certain chronic painless cancers in old persons which are best let alone, unless they manifest a disposition to assume an acute form; but for most cases, provided thorough extirpation be possible, we cannot but think that an operation offers the best chance. If, however, the entire mass of disease cannot be removed, the knife will, we believe, but stimulate what is left to renewed activity, and in such cases operations should, we think, be avoided. We may add that Mr. Collis recommends that the axillary glands should be let alone, even when the breast is removed. "Incisions into the axilla," he says, "will, no doubt, enable us to get away most or all the glands in it, if ever so little enlarged; but the result of such practice is generally the development of lardaceous cancer of the arm and side, and sometimes the spread of the disease to the cervical glands."

Mr. Pemberton treats, in Chapter IV., of *Schirrus of the Rectum.* The symptoms of this most distressing affection our author divides into three stages. "In the first stage the bowels almost suddenly begin to act irregularly, being sometimes relaxed, but generally more constipated than natural. The bowels may be the seat of pain; there may be mucous discharge, or the feces may be streaked with blood; there is often tenesmus.

[1] Med.-Chir. Trans., vol. xlii. pp. 111–152.
[2] Ibid., vol. xlv. pp. 389–406.

"The general symptoms are those of dyspepsia, nausea, loss of appetite, and an uncomfortableness after taking food." Digital examination of the rectum will generally betray a certain amount of constriction and induration; this usually begins about one and a half inches above the anus, but may be much higher.

In the second stage the above-mentioned symptoms are aggravated, while the general health suffers markedly, an appearance of debility supervening, "whilst the complexion assumes an earthen or leaden cast." The feces may be flattened, or ribbon-like; the finger introduced into the rectum detects hard cancerous nodules, the intervening rectal tissues being hardened and infiltrated. If ulceration have taken place, the finger will be smeared with blood. Above the seat of obstruction the gut becomes distended by fecal accumulation, and the patient may be rendered still more uncomfortable by the formation of anal fistula, and by retention of urine due either to spasmodic stricture or to absolute pressure from the diseased mass. In the third stage, the obstruction becomes complete; vomiting ensues, the patient rapidly fails, and death follows either from exhaustion or from peritonitis which may be determined by rupture of the bowel and extravasation of its contents.

In the first stage of this disease, local treatment "is worse than useless." In the second stage, the continued use of dilating bougies is recommended. Here we must doubt the judiciousness of our author's advice: in the ordinary non-malignant stricture of the rectum the cautious employment of bougies may undoubtedly keep the disease in check and thus prove of great service; in the cancerous form, however, it is a question whether the irritation from their use will not do more harm than the dilatation effected can do good—not to speak of the risk of perforating the rectal wall. At the commencement of the third stage, colotomy by Amussat's method is urgently called for. Mr. Pemberton has performed this operation on three occasions, death following on the 11th, 3d, and 6th days, respectively. The operation has been more successful, however, in the hands of others, and should, we think, certainly be had recourse to in the circumstances indicated.

Scirrhus of the Thyroid Gland is treated of in Chapter V. When the thyroid gland becomes involved in the course of cancerous disease which is manifested in other organs as well, there is of course not much difficulty of diagnosis: in the rare cases where scirrhus of this part is a primary affection, the marks to be relied upon are (1) the rapid growth of the tumour, (2) its painfulness, (3) its firm and extensive adhesions, (4) its immobility *on* the larynx, and (5) the severe and paroxysmal dyspnœa which accompanies the development of the disease. The treatment is of course very unsatisfactory: tracheotomy may be indicated, where suffocation appears imminent from the pressure of the growth upon the air-passages. Mr. Pemberton relates an interesting case, in which, though the disease had lasted ten or twelve years, there was no emaciation and no "cachexia." This he considers very remarkable. But it seems to us that Mr. Collis's view is the correct one, viz., that cachexia only exists where the disease affects some important viscus, and thus interferes with the proper renewal or purification of the blood. Hence (and this observation we have ourselves been enabled to verify in practice) there may be very extensive *external* cancer with no cachexia, while a very limited amount of disease in one of the internal viscera may cause an early development of cachexia in its most marked form. Indeed it is questionable whether

there be any definite condition which properly deserves the name of *cancerous* cachexia, and which may not be produced by visceral disease of a non-cancerous character.

In Chapter VI. our author begins the consideration of *Encephaloid Growths*, and deals particularly with *Encephaloid Tumours of the Cranium*. These may originate from the skull, from the membranes of the brain, or from the cerebral mass itself. When they originate within the skull they have usually a distinct pulsation, and the margin of the bony aperture through which they protrude can sometimes be distinguished. Should the surgeon be able to satisfy himself that such a growth originates from the external table of the skull, excision of the diseased mass might be attempted. Hemorrhage in the later stages must be restrained by the use of compresses and lint soaked in the muriated tincture of iron. The progress of the disease might possibly be retarded by the employment of elastic pressure.

Encephaloid of the Cavity of the Nose is the subject of Chapter VII. This is a frequent form of disease, and is generally known as cancerous or malignant polypus. From it the mucous polypus may be distinguished by the usually pedicellate attachment of the latter and by its hygrometric properties. The fibrous polypus may be recognized by its hardness and by the fact that it springs from the periosteum, pushing the mucous membrane before it. The malignant polypus may be mistaken for other malignant growths, originating in the antrum or other adjacent parts, or even in the cranium, appearing in the nose through a perforation of the ethmoid bone. Encephaloid of the nasal cavity sometimes occurs in very early childhood: for its treatment the nose should be freely laid open and the disease, if possible, completely removed. Tracheotomy may be required if the impediment to breathing be very great.

The subject of *Encephaloid Tumours of the Upper Jaw* is discussed in Chapter VIII.

"To determine the parts of the sinus from which the tumour originates will almost always be impossible, and the surgeon will rather content himself with forming a judgment on the disease as it involves any part of the bone that may require excision, than endeavour to refine on limits of origin, uncertain in themselves, and which exercise little influence on the treatment."

The symptoms and diagnostic marks of this distressing affection are well described, and two cases narrated in illustration of the several points referred to: in both the disease reappeared after operation, and eventually proved fatal.

"Complete extirpation of the bones with which the cancer is connected is, in every case, the only remedy applicable in the upper maxilla."

The steps of the operation for removal of the upper jaw are described, preference being given to the old incision from the zygoma to the angle of the mouth. Should the disease extend backwards towards the pterygoid processes, there will be risk of severe or even fatal hemorrhage, either during or subsequent to the operation, from the internal maxillary artery, as occurred in a case under the care of the late Mr. Amphlett, where it was finally necessary to tie the common carotid, death nevertheless ensuing on the eighth day after the excision.

In Chapter IX., several cases of encephaloid disease affecting the lower jaw are detailed, and full instructions given for the operation of excision of that bone. The following remark is important:—

"In the cases of excisions of portions of the body that I have watched in their subsequent conditions, the return of the disease has invariably occurred in that portion of the divided jaw nearest to the articulation."

Hence "to secure a lengthened immunity from return of the disease the removal must be free and complete, and in those cases where it is situated near the angle so as to encroach on the ramus, disarticulation should in all cases be performed."

Fibrous tumours of the lower jaw may be distinguished from encephaloid by their slow growth and even, rounded shape, and by absence of pain or of glandular implication or venous engorgement. These tumours may be safely removed by less sweeping operations than are required for malignant growths affecting the same part.

Chapter X. is devoted to *Encephaloid Disease of the Breast*, which Mr. Pemberton has never seen existing as a primary affection. The great rarity of this form of mammary cancer in England, and its comparative frequency in France and in Ireland, is in Mr. Collis' opinion perhaps to be explained by a difference of national temperament and physical constitution. "The *embonpoint* of the English may give a tendency to fatty deposits in the gland, which are at variance with pure encephaloid; while the more lively blood of the Celtic races may occasionally induce the rapid and early development of the acute form."

Encephaloid of the breast occurs usually at an earlier age than scirrhus of the same part; during the first stage there is no glandular complication, no retraction of the nipple, and, usually, no constitutional affection. In fact this form of cancer is at first even more evidently a local disease than scirrhus. When seen sufficiently early, operative interference is urgently demanded. Mr. Collis has seen recovery, apparently permanent, follow extirpation under these circumstances; and even Mr. Cooke, who, as we have seen, is no advocate for operations in scirrhus, recommends the use of the knife in cases of mammary encephaloid.

"There being no hope of a natural termination of this malignant growth, it should be extirpated as soon as recognized, provided the whole of the tumour can be reached by the knife. Life has been prolonged by this proceeding occasionally for two or three years; whereas, if the disease be left to progress as is its natural bent, sloughing and hemorrhage will bring about a miserable death in perhaps a few months."

Where encephaloid of the breast is a secondary affection, excision can of course be considered only as palliative. Mr. Pemberton has operated in one such case (encephaloid coexisting with scirrhus in the same breast) the wound healing rapidly and the patient surviving for just a year.

Various non-cancerous tumours are liable to be mistaken for encephaloid, in their later stages, especially certain forms of fibrous or of cystic growths. The diagnosis can be made from their history and from the fact of their not implicating the neighbouring glands. Mr. Pemberton gives several interesting cases to illustrate these points.

Encephaloid Cancer of the Testicle is treated of in Chapter XI. This affection usually occurs between the ages of 30 and 40, begins in the structure of the gland itself, and for a long time does not spread beyond the limits of the tunica albuginea. When this gives way, the tumour rapidly distends the scrotum, the superficial veins becoming enlarged, the raphe displaced, and the penis, as it were, tucked in. In the second stage the patient becomes cachectic, and the lumbar lymphatic glands increase in size and form large cancerous masses, which press on the great vessels

of that region, and sometimes hinder the action of the diaphragm, thus giving rise to dyspnœa. The scrotum occasionally ulcerates and a fungous mass protrudes. Death takes place from gradual exhaustion, sometimes hastened by repeated hemorrhages.

Encephaloid of the testis is to be diagnosticated from hydrocele and from hæmatocele, from scrofulous, from syphilitic and from cystic disease.

"The only remedy applicable in cases of cancer of the testicle is castration. This should be adopted in the earliest possible stage before the general health has become affected."

If the operation be performed early, it is not likely to be attended with any special risk, but the disease is almost certain to recur, and at an early period. "In a case," says Mr. Collis, "where the patient should refuse to submit to castration at an early stage of the disease, I should not hesitate to cut down on the cord, tie the vessels and divide the vas deferens, as the next best proceeding to removal of the diseased mass, and one which might be submitted to where the other would not be heard of. It would at least do no harm, and might certainly be expected to stave off the evil day."

The two following chapters of Mr. Pemberton's volume are devoted to a most important subject, viz: *Encephaloid Disease of the Extremities.* The long bones themselves may be affected, the disease existing in the form of an infiltration, or the cancer may be developed as a tumour having its origin in the intermuscular spaces, usually in the cellular tissue between the periosteum and the deeper muscles. Encephaloid cancer contiguous to bone may be mistaken for chronic abscess, aneurism, fibro-cellular, or fibro-plastic tumour. Although the bones themselves are not affected in these cases, they may be so eroded and thinned by the pressure of the cancerous mass as to be readily fractured. In this form of the disease, Mr. Pemberton counsels non-interference, so long as the growths advance slowly and produce neither pain nor inconvenience. When they assume greater activity, excision if practicable, if not amputation in the continuity of the limb may be performed. With regard to the question between enucleation and amputation in cases of this kind, it cannot be denied that the feeling of the profession at large is in favour of the more sweeping operation, as offering a stronger hope of future immunity. Statistics are wanting to decide this point, but for our own part we cannot but think Mr. Collis (and Mr. Pemberton, if we read his advice rightly) justified in recommending the milder operation in preference to the other:—

"I cannot avoid the impression," says the Irish surgeon, "that it is not justifiable to perform a severe operation where a milder one will remove the tumour. Certainly amputation confers no immunity from return. I believe it rather favours it by lowering the system. In the case under consideration [in which amputation was performed, enucleation being rejected from dread of hemorrhage] the tumour was found to be quite capable of removal, without interference with the vessels. Its deeper parts occupied the intermuscular spaces, while the muscles, skin, and glands were perfectly free from incorporation with it. It was a perfect example of acute cancer."

Cancerous disease affecting the long bones themselves is principally developed in one of two ways. In the first the normal osseous structure becomes gradually merged in the adventitious tissue and finally disappears altogether; in the other the new growth expands the bony wall which remains as a thin shell surrounding the tumour. Under other circumstances again, the cancerous tumour may spring from the external surface

of the compact structure of the bone, between it and the periosteum; it is in this variety that amputation offers the best chance of a permanent cure.

Osteoid cancer is of much slower growth than encephaloid, and is clinically less malignant: it is frequently associated with the more acute form in the same tumour.

"The only treatment applicable to these malignant tumours of bones is amputation or disarticulation. Either the one or the other of these means of removing the disease should be resorted to in the earliest possible stage, before either the glands or the constitution have become in any way affected by its presence. Local applications are worse than useless in these cases, and serve only to diminish the chances of the patient's immunity from recurrence of the malady in the future."

The author then goes on to recommend disarticulation or amputation above the contiguous joint for all bone cancers except those of the lower part of the femur.

"When, however, the malady is in the lower third of the bone or in the condyles, there will be many reasons to induce the surgeon to amputate through the shaft of the femur, high up, rather than disarticulate.

"The foremost of these will ever be the gravity of amputation at the hip, under any circumstances—a gravity rendered more conspicuous in the face of the well-known want of power to bear operations which patients suffering under malignant disease of bone so constantly exhibit.

"Further, that although the liability for the cancer to recur at the sawn extremity of the bone is very great, it must also be borne in mind that it by no means always does so; any more, indeed, than that recovery after amputation at the hip establishes any certainty that the patient will escape secondary deposits in the internal organs, rather than one who has also recovered from amputation through the continuity of a limb."

We are disposed to think that this rule of amputating through or above the contiguous joint in cases of cancerous disease of the long bones, has been made too absolute. The same reasoning which Mr. Pemberton uses with regard to the femur (and which seems to us extremely cogent), is almost if not quite as applicable to other parts of the body. Mr. Erichsen records a case of "peripheral osteo-cancer" affecting the lower end of the tibia, for which amputation was performed in the upper third of the same bone. The disease recurred, not in the stump, but in the bones of the pelvis. Mr. Collis refers to a case of Prof. Hargrave's, where amputation of the thigh in its upper third, for encephaloid disease of the middle and lower thirds of the bone was followed by recovery, the patient surviving at least fifteen years, and Mr. Pemberton himself gives a similar case where the patient was in good health and gaining her living as a servant more than ten years after amputation in the continuity. We believe that there are not at present facts enough before the profession to warrant a positive decision upon this question, and that it should therefore still be held *sub judice*. In the meanwhile we are ourselves disposed to think that, in some cases at least, amputation through the line of junction of the upper epiphysis might be profitably substituted for disarticulation in other regions of the body as well as in the thigh.

Chapter XIV. of Mr. Pemberton's work is devoted to the subject of *Melanotic Cancer*. This chapter is pretty much reprinted from the author's essay on melanosis, published in 1858, and which was noticed in the number of this journal for October, 1859, page 517. We need not, therefore, dwell on Mr. Pemberton's views at this time, further than to say that he recognizes both a primary and a secondary form of melanotic cancer, as well

as a non-malignant variety of melanosis. In his former essay, the author recommended the use of caustics in the treatment of this affection, in preference to the employment of the knife. Enlarged experience has apparently induced a change of opinion, for he now makes no reference to the use of caustics, but advises speedy and complete extirpation with the knife whenever practicable. The reference on page 88, to "Plate III.," is likely to mislead the reader, the plate in question being the third in number belonging to the author's previously published essay, and forming an illustration which, for some reason, he has not reproduced in his present work.

Epithelial Cancer of the Lip is treated of in Chapter XV. This affection (which is now usually called epithelioma) almost always affects the lower lip, and very rarely occurs in women. With regard to the external agencies to the action of which it has been attributed, while Mr. Pemberton does not believe that the use of the short pipe can produce the disease, except as any other irritant might, in persons predisposed to the affection, yet it is, as he observes, at least remarkable that in the only instance in which he has known the disease to occur in a woman, "the short pipe should have been the constant companion for seventeen years." As to the causal efficiency of the short clay pipe in inducing epithelioma of the lip, Mr. Collis has no doubt whatever, calling it, indeed, the "foremost of exciting causes." He attributes its effect, however, rather to pressure, with the occasional addition of excessive heat, than to any deleterious property of the tobacco.

Epithelioma of the lip may have to be distinguished from several other affections. Rodent ulcer is as rare in the lower as epithelioma is in the upper lip. Indurated chancre of the lip may be recognized by its history (when that can be obtained), by the great rapidity with which the neighbouring glands become enlarged, and by its yielding to anti-syphilitic treatment. "Cancroid ulcer" of the lip, as described by Mr. Pemberton, seems to us to be one of the varieties of lupus of other writers. It is essentially a local and a chronic disease, though it sometimes unexpectedly becomes the nidus of true epithelioma.

Complete removal with the knife is the mode of treatment recommended. To be successful it should, of course, be practised before any glandular complication has occurred.

"This operation," says Mr. Pemberton, "must always be regarded as palliative, and though the extent of diseased surface may hardly prove a barrier to its being undertaken, the existence of enlarged glands in the vicinity should ever determine the surgeon against its performance."

Mr. Collis is more hopeful:—

"Indeed," he says, "I will go so far as to assert that relapse will never occur where the knife is used in time and all disease removed, provided caustics have not been employed. I have seen the disease completely removed, and a new attack come on in another part of the lip unconnected with the cicatrix of the former operation; but this is essentially different from relapse."

Mr. Collis would never use caustics; Mr. Pemberton and Mr. Cooke believe that they may be of service in some cases where excision would be impracticable. The favourite application of the first-named gentleman is the chloride of zinc, that of the latter, the "manganese-cum-potassa."

Chapter XVI. is devoted to *Epithelial Cancer of the Tongue*. Among the causes of this painful affection may be mentioned, according to Mr. Pemberton, the presence of ragged and carious teeth, and the degeneration

of intractable venereal ulcers. It is to be diagnosticated from ordinary chronic ulceration, and from syphilitic disease of the organ. In the latter affection the glands become sooner involved, but do not form the large and painful tumour which they do in cases of cancer. The treatment of lingual cancer can, at best, be considered as only palliative. Large portions of the tongue or even the whole organ may be removed by operation, the écraseur being the instrument preferably to be employed, as being safer than the knife, and less painful and tedious than the ligature. Division of the gustatory nerve of the side affected, as a means of temporarily relieving pain, has been practised by Mr. Hilton, and more recently by Mr. Moore, and is certainly worthy of a trial in cases unsuited for excision. The application of the muriated tincture of iron, or of the actual cautery may be required to check bleeding in the latter stages of the disease.

Epithelial Cancer of the Scrotum, generally known as chimney-sweeper's or soot cancer, is the subject of the next chapter. This is a disease of frequent occurrence in the neighborhood of Birmingham, and is, in Mr. Pemberton's experience, absolutely confined to chimney-sweepers. Hence the irritation produced by the prolonged contact of soot may be fairly considered an exciting cause of the affection, in those predisposed to the development of epithelial growths. The diagnosis presents no difficulty, and the only treatment to be recommended is complete excision with the knife, with or without castration, according to the progress made by the disease.

Epithelial Cancer of the Penis is discussed by Mr. Pemberton, in Chapter XVIII. Congenital phimosis may be considered the most prominent among the exciting causes of the affection. It has been known to be developed in the seat of long-standing venereal ulcers, and has occasionally been directly traceable to the effects of external violence. The inguinal glands become enlarged at an early period from sympathetic irritation, and at a later stage of the disease become the seat of cancerous infiltration, and undergo wide and deep ulceration. Excision or amputation are the only means of treatment to be recommended, and should be resorted to as soon as the disease is recognized. Where practicable, Mr. Collis recommends that the penis should be amputated by Hilton's method, rather than by the usual plan of separating the organ by a single stroke of the knife. In Hilton's operation, the spongy portion is cut about an inch lower than the cavernous bodies, and is then split into two or more flaps to be everted and attached to the skin. By this plan retraction of the urethra is prevented, and rapid healing is promoted. Mr. Pemberton, we may observe, recognizes but one form of cancer of the penis, the epithelial; while Mr. Collis describes two distinct affections, scirrhus, attacking the substance of the organ, and epithelioma, which finds its usual nidus in the prepuce.

Epithelial Cancer of the Labia Pudendi, which forms the subject of Chapter XIX., may be mistaken for syphilitic disease, or more excusably for lupus. The latter affection may be distinguished by its slow progress, its painlessness, and the usual absence of glandular complication. If epithelioma of the vulva be recognized in time, excision may be practised with hope of temporary if not of permanent advantage. The disease is, however, usually concealed from motives of modesty, until operative interference is out of the question. In such cases Mr. Collis recommends the application of perchloride of iron, and Mr. Cooke advises that the patient should be taught the use of the catheter, by the regular employment of

which instrument the constant irritation produced by the contact of urine may be avoided.

Epithelial growths may be developed in or near congenital moles or warts, or may supervene upon the cicatrices of wounds, burns, or ulcers. More rarely has true encephaloid been developed under corresponding circumstances. Free excision or amputation, according to the size and connections of the morbid growth, should be early practised. These operations are, however, not free from danger, the subjects of them being, in our own experience, rather prone to die with symptoms of pyæmia or other forms of blood poisoning; though if the case do well, prolonged if not permanent immunity from return of the disease may usually be anticipated.

The local application of bismuth, and the continued use of ice have succeeded in Mr. Collis' hands in effecting a cure in some cases, and the employment of caustics, especially of arsenic and of the pernitrate of mercury, has been highly extolled by other writers. The peculiar form of ulcer of the leg, which is usually known as the "warty ulcer of Marjolin," is, we believe, entirely incurable, and should always be considered a case for amputation.

Mr. Pemberton's last chapter is devoted to a consideration of *Rodent Ulcer*. This peculiar affection he considers as not truly malignant, but as forming "a natural transition between true cancerous disease on the one hand, and intractable ulcerations of a non-malignant nature, similar to lupus and lupoid ulcerations, on the other, and to be closely allied to both." This disease, which is usually known in Ireland as "Jacob's ulcer," from having been described by Dr. Arthur Jacob in the 4th volume of the *Dublin Hospital Reports*, is classed by Mr. Collis among the fibroplastic growths, and is consequently by him not considered as in any degree deserving the name of cancer. Mr. Moore, on the other hand, following Mr. Cæsar Hawkins, looks upon it as a true cancer, and argues ably in support of his view. Leaving these theoretical considerations, we have to say that this disease, which (as our readers are doubtless aware) is seldom met with except in the upper part of the face, usually about the eyelids, is very chronic in character, lasting from five to twenty-five years, is usually painless, and does not involve the neighbouring glands; its strictly local character throughout its course being indeed a principal reason why it has been considered as of a non-cancerous nature.

When small, the rodent ulcer may be removed by the application of caustics; if larger, excision with the knife is preferable; and, even in the most advanced stages, a combination of these methods may succeed in effecting a cure of what is usually looked upon as a totally unmanageable affection. Mr. Moore has thus operated in cases of five, of thirteen, and of twenty-six years' duration, the ages of his patients being seventy-one, fifty-four, and fifty-nine years respectively.

We have thus terminated our examination of Mr. Pemberton's handsome folio, which we think must be conceded by every one to be of great value, as embodying the results of the immense clinical experience of the author. Ninety-four cases are given in detail and add materially to the usefulness of the book to practical surgeons. The twenty-seven wood-cuts and the twelve chromo-lithographic plates are of variable excellence. None of the latter are equal to some that have been executed by the same process both in England and in this country. The book itself is very handsomely and generally accurately printed, at a Birmingham press.

Mr. Collis' volume has the melancholy interest attached to it which always belongs to a book which has made illustrious its author, too soon snatched away by death from the scene of his labours and triumphs. It is a book which is at times almost startling, from the novelty and independence of the writer's views: it is certainly the most fascinating book upon cancer with which we are acquainted. Its illustrations are of a high order of excellence (much more artistic than those accompanying Mr. Pemberton's treatise), and the work, as a whole, will, we think, always be looked upon as deserving a high place in the literature of the subjects with which it deals.

Mr. Cooke's essay has already been the subject of a short notice in the pages of this Journal (see number for January, 1867, page 234); we will merely add to what is said there, that it strikes us as having an especial value as representing the unfavourable side of the cancer question, the author's official position bringing before him many avowedly incurable cases, and cases of relapse after operation.

Mr. Moore's little volumes are full of food for thought, and his points are clearly presented and ably argued. The "local-origin" theory of cancer has no warmer nor more able advocate than the Surgeon of the Middlesex Hospital.

The excellent papers of Mr. Delagarde and of Mr. Baker have already been noticed in the pages of this Journal, in connection with the volumes in which they appeared. Did our space allow, we would gladly refer to them at length for their bearing upon important practical questions as to the treatment of cancerous affections.

All of the books and papers, the titles of which we have placed at the head of this article, contain a great deal of important information with regard to the theoretical opinions entertained as to the pathology of cancer. To these matters we have scarcely even alluded, as our object was to show the prevailing views as to the more immediately important question of the *surgical treatment* of cancer. And we think the evidently growing tendency on the part of surgical writers to recommend early operations, must be taken as an evidence that, apart from all theoretical considerations, the propriety of this course is coming more and more to be recognized as an established fact It may be doubtful whether complete unison of sentiment will ever be arrived at with regard to the essential pathology and etiology of cancerous growths: the prospect is more hopeful for a definite settlement of the proper modes of treatment; and such excellent clinical works as those which we have been considering, will undoubtedly do much towards bringing about this desirable consummation. J. A., JR.

ART. XXI.—*The Nomenclature of Diseases, drawn up by a joint Committee appointed by the Royal College of Physicians, of London.* London: Printed for the Royal College of Physicians, by W. D. & S. Golbourn, Prince Street, 1869. pp. 327.

THE desirableness of a generally recognized nomenclature of diseases is too evident to require any discussion. Obviously, it is an indispensable condition "for perfecting the statistical registration of diseases with a

view to the discovery of statistical truths concerning their history, nature, and phenomena." To discuss the importance of statistical facts concerning the history, nature, and phenomena of diseases would be needless. Enough has been accomplished already to render the discussion of this point superfluous as regards thinking medical men. There is reason to believe, however, that the truths which have been ascertained are only an earnest of future developments in this direction. In our country the fruits of a proper registration of diseases have scarcely begun to be reaped. Here, especially, it is important to bring the matter to the minds of the profession more fully and extensively than has yet been done; for, with us, an effective registration of diseases is only to be secured by the medical, acting on the popular, mind. Moreover, in our country a system of registration is to be adopted, not by a single government, but by a multitude of governments, each being independent of the others as regards matters of this kind. In this fact, together with the other fact just alluded to, namely, the necessity of arousing and directing public sentiment, we have an explanation of the tardiness with which, in everything relating to governmental provisions for medical knowledge, our democratic country follows the lead of other nations. This is not the place to discuss political subjects, and we should be among the last to wish to deviate from propriety in this respect; but we may be permitted the remark, that efficient measures for the promotion of the science and art of medicine are not to be reckoned among the blessings of democracy. The American medical profession, however, have made some progress in their efforts upon our legislative bodies, as regards the registration of diseases, and, by way of compensation for the dissatisfaction arising from the little that has hitherto been done, we may entertain hopes of better things in the future.

It is difficult to bring the minds even of thinking persons not of the medical profession to an appreciation of the fact, that all mankind are deeply interested in the progress of knowledge respecting the history, nature, and phenomena of diseases. Nor is it easy to impress upon the public mind the importance of striving to prevent, remove, or diminish morbific agencies. In the latter point of view, the truths developed by statistical registration have been, and promise to be still more, useful, by shedding light upon the causes of disease. Here, we need not say to the medical thinker, is a field of investigation in which the unknown vastly predominates over the known. Who can venture to foresee the developments which, in the providence of God, may result from continued and increased efforts in this direction!

It is evident that statistical facts obtained by the registration of diseases are likely to lead to important truths in proportion as the area of investigation is extensive. This is well expressed in the following quotation from the preface: "The statistics of a single town may be instructive; but more instruction will be obtained from the compared statistics of various and many towns. This is alike true of different districts of the same country, and of different countries and climates; and the most instructive sanitary statistics would be those which related to the whole of the inhabited portions of the globe."

For a concise statement of the need of a uniform nomenclature with reference to the registration of diseases, we cannot do better than to quote further from the preface: "For the registration of statistical facts, it is clearly requisite that there should be a uniform nomenclature of diseases coextensive with the area of investigation; and taking the largest area,

the universal globe, the nomenclature would need to be one that can be understood and used by the educated people of all nations." * * * * * "When a general and uniform nomenclature has once been carefully framed, when we are sure that medical observation is occupying itself everywhere with the selfsame diseases, the value of statistical tables becomes very high, as representing the course of events in disease, under various circumstances of time, place, season, climate, manners and customs, age, sex, race, and treatment. This general, or common, or *standard* nomenclature need not be imposed upon every nation and people as its proper nomenclature. It could not. It would be unintelligible by the people at large, and embarrassing to those by whom the necessary returns must be made. But the nomenclature proper or peculiar to each country, and which may be called its *national* nomenclature, should be readily convertible into the *standard* nomenclature."

For the construction of a nomenclature of diseases, a committee of the Royal College of Physicians was appointed in 1857. Representative members of the Royal College of Surgeons, the Society of Apothecaries, the Medical Department of the Army and Navy, the Registrar-General, the Epidemiological Society, etc., were subsequently added. The meetings of the Committee were suspended in 1858 and resumed in 1863, when the Committee was further enlarged, and sub-committees appointed. Sir Thomas Watson was the Chairman of the Committee, and the names of the other members afford a guarantee that the work would be faithfully and well done. The publication is subject to a decennial revision. Of the result of their labours, the Committee say, in the preface, as follows: "The Committee appointed by the Royal College of Physicians of London have prepared a nomenclature suitable to England, and to all countries where the English language is in common use. For each name they have supplied the corresponding Latin term, which is the language of ancient science, and probably the fittest language for a nomenclature common to all the world; and also the equivalent term in the three modern languages which are the richest in medical learning and literature—the French, the German, and the Italian languages: and in this way they hope to have laid the foundation for a nomenclature of diseases in any language extant on the earth."

The work is intended to serve as a guide to the practitioner in the use of the names of diseases for registration and other purposes. The arrangement for this end is excellent. On one page is a list of the names of diseases in Latin, French, German, and Italian; and on the opposite page is the English name with such definitions and explanations as are called for. An index is added, embracing the names for common use, the Latin names and synonyms not to be employed in registration, each in different kinds of type, with figures indicating the page where the disease is to be met with, and where the disease is to be registered. In the English list of names there is but little deviation from those employed by the Registrar-General of England. As far as possible, the names selected are those which comprise but one word or the fewest words, and those which imply no erroneous or doubtful theories. As far as we can judge, the nomenclature offers very little room for criticism. There is no coining of names, and there are no needless changes or innovations. The modes of distinguishing the nature of the disease by the terminology, which, within late years, have come into use, are retained. In short, as it seems to us, in view of the opportunity for revision at the end of ten years, the nomen-

clature is all that is to be desired. In saying this we would not be understood to say that the nomenclature is perfect. Changes will doubtless be made hereafter which are not now advisable. For example, it is to be hoped that the name *Catarrh* will, by and by, be eliminated, and that the name *Bright's disease* will not, as now, be used to embrace several different affections.

In connection with the nomenclature of diseases, their classification is a matter of importance. We do not propose to enter into a discussion of nosological systems, and we shall content ourselves with an expression of satisfaction with the arrangement which the Committee have adopted. They state that, after much consideration, they resolved "that the proposed classification of diseases should be based upon anatomical considerations." Accordingly, diseases are first grouped as being general or local. General diseases are subdivided into two sections, namely, *first*, those which appear to involve a morbid condition of the blood, running a definite course, frequently attended with eruptions, often communicable, occurring epidemically, and generally protecting against a second attack. In this section are embraced all the essential fevers, together with cholera, diphtheria, etc. The *second* section embraces general diseases which are apt to invade different parts of the body simultaneously or in succession, and often manifesting a tendency to transmission by inheritance, such as rheumatism, gout, syphilis, carcinoma, etc. The local diseases are arranged after the different anatomical systems, namely, diseases of the nervous system, of the eye and ear, of the circulatory system, of the respiratory system, etc. Under the head of "Conditions not necessarily associated with general or local diseases," are embraced poisons, general and local injuries, old age, debility, with still-born and premature births. Finally, surgical operations, human parasites, and congenital malformations are contained in an appendix.

We repeat an expression of satisfaction with this nosological arrangement. In the present state of our knowledge of pathology and etiology, any other system of classification is objectionable. The anatomical plan is the most convenient, as well as the least open to objection on other grounds. Considering that Dr. Farr was a member of the Committee, we have reason to congratulate ourselves that such names as zymotic, dietic, and enthetic are not to be found in the classification which was adopted.

In conclusion, we hope that the nomenclature and the classification of diseases, as adopted by the Committee appointed by the Royal College of Physicians of London, will be accepted in this country. The question as to their acceptance should be submitted to our State and local medical societies. It is desirable that there should be unanimity of action; and, as preliminary thereto, we should be glad to see a reprint of the publication extensively circulated. It strikes us as a good plan for different societies to unite in procuring the publication for gratuitous distribution among their members.

A. F.

ART. XXII.—*Circular No. 2, War Department, S. G. O., Washington, January 2, 1869. A Report on Excisions of the Head of the Femur for Gunshot Injury.* By GEORGE A. OTIS, Assistant Surgeon and Brevet Lieut.-Colonel U. S. A. Quarto, pp. 143. Washington, 1869.

GUNSHOT injuries of the hip-joint have long been considered as amongst the most serious injuries, not immediately fatal, to which the soldiers of modern warfare are liable. Until within a comparatively few years there was no course of treatment presented to the surgeon except to abandon his patient to a most tedious and painful (and very problematical) convalescence, or to adopt what Hennen terms the "tremendous alternative" of hip-joint amputation, of which he declares "there is not one patient in a thousand that would not prefer instant death to the attempt," and from the very idea of which he exclaims, "the boldest mind naturally recoils." This operation, which Percival Pott called "horrid," and which, though he had seen it done, he was very sure he should never do himself, unless on a dead body, is now grown so familiar to us, at least in this country, that almost every surgeon has seen it done repeatedly, even if he have not himself had occasion to resort to it in practice. Indeed there is no way in which we can more forcibly realize the magnitude of the war through which we have so recently passed, than by opening one of these splendid Circulars of the Surgeon-General's Office, and noting the frequency with which the great operations of military surgery have been employed. Thus one-third of all the hip-joint amputations for gunshot injury which have been recorded up to the date of the volume now before us, are cases which occurred during the late war, while nearly three-fourths of all the hip-joint excisions for similar causes on record, occurred in our armies during the same period.

"Circular No. 2" is devoted to the subject of hip-joint excision, and we now purpose to give a brief analysis of its contents, for the benefit of those of our readers who may not have access to the volume itself. In his prefatory address to the surgeon-general, the reporter, Dr. Otis, takes occasion to reiterate his reasons for classifying the operations which he is about to report into the three categories of primary, intermediate, and secondary.

> "This classification," he tells us, "has been criticized by students of the closet and by surgeons in civil life, but by no military surgeons of practical experience. . . . Critics may cavil at the scientific accuracy of such classification, but when the facts are at hand to demonstrate its utility, their strictures are of little value."

For our own part we are disposed to think such a classification eminently scientific, the only apparently valid argument against it being the difficulty in any individual case of fixing the exact period when one stage passes into another; we say *apparently* valid, for every logician will recognize this as a variety of the "falling heap" argument, universally acknowledged as a fallacy. While it may *seem* more precise to classify cases according to the number of hours or days which have elapsed between the time of injury and that of operation, there can be no question, we think, that the more rational division is that adopted by Dr. Otis, into the ante-inflammatory, the inflammatory, and the post-inflammatory stages.

"Although excision of the upper extremity of the femur for gunshot injury was first practised only forty years ago, the bibliography of the subject is inaccessible to many of the medical officers, and it is thought best to review concisely what has been written upon it."

Accordingly the first portion of Dr. Otis's volume is devoted to a Historical Review, which occupies eleven pages, and is generally correct and just. We have, however, found in this portion of the work two very grave errors, which, at the risk of provoking a renewed sneer as to the folly of "students of the closet and surgeons in civil life," presuming to criticize the productions of their military brethren, we will now venture to point out. One mistake is in classing Dr. Ross's case, which occurred in 1850, as an instance of excision of the head of the femur, instead of placing it where it belongs, among the cases of extraction of sequestra already separated by suppurative action. This mistake is the more apparent, because Dr. Hodges (himself favourably known both as a student of the closet and as a surgeon in civil life) had correctly designated the case in question in his monograph on excisions published in 1861. Our knowledge of the case, like that of Dr. Otis, is principally derived from Dr. Fock's paper in the first volume of Langenbeck's *Archiv für klinische Chirurgie*, and that our readers may decide for themselves as to the justness of our criticism, we shall quote the words of the German writer, and then give in parallel columns a literal translation, and the version found in Circular No. 2.

"Hinter dem grossen Trochanter befanden sich drei Fistelöffnungen vorne unter der Schenkelbuge zwei, welche auf ein bewegliches, rauhes Knochenstück führten. Dasselbe wurde am 10. Juni 1850, nachdem die Eiterhöhle, in welcher es hinter den grossen Gefässen eingebettet lag, durch einen genügenden einschnitt eröffnet war, mittelst eines eingebohrten Tirefonds entfernt: es war der cariöse Schenkelkopf mit einem Theile des Halses." (*Archiv für klinische Chirurgie*, I. Band. I. Heft. s. 214.)

Literal Translation.

Behind the great trochanter were three fistulous openings; in front, under the arch of the thigh, two, which led to a movable, rough piece of bone. The latter was, on June 10th, 1850, after the suppurating cavity, in which it lay imbedded behind the large vessels had been opened through a sufficient incision, by means of a bored-in screw-elevator (tire-fond) removed; it was the carious thigh-head with a part of the neck.

Free Translation of Circular No. 2 (page 13).

"Behind the great trochanter there were three fistulous openings, and two sinuses in front, through which a probe detected rough surfaces of bone. On June 10, 1850, Dr. Ross made a free incision on the outside of the thigh over the trochanter major, and exposed a large suppurating cavity in which lay the carious head of the femur and a large portion of the neck. The diseased epiphysis was twisted off by strong forceps."

If the above citation is not sufficient, we would add that Dr. Fock, in another part of his paper (page 174) distinctly classes Ross's case with those of Schlichting, Vogel, Kirkland, Hofmann, Ohle, Schmalz, Schubert, Klinger, Harris, Batchelder, Ried, and Brandish, as cases where "the already-separated thigh-head partly by art was removed, partly by itself through a fistula had come out."

The other mistake to which we have alluded is even more serious, as involving a charge of untruthfulness and professional dishonesty against no less eminent a surgeon than Dr. Stromeyer. In referring to Schwartz's case of intermediate excision, Dr. Otis says (p. 13, foot note): "It is re-

markable that Stromeyer appears to claim the operation for his own." So far is this accusation from being merited, that Stromeyer distinctly avers, in the fifth part of his Handbook of Surgery (*Statham's translation*, London, 1856, p. 27), that, in the case in question, "Dr. H. Schwartz performed resection under my direction;" and even the sentence which Dr. Otis quotes from Stromeyer's later work has a very different meaning from that which he attributes to it: "Ich liess vornehmen" signifies, not "I undertook," but "I caused to be undertaken."

With these two exceptions, Dr. Otis's Historical Review is, we believe, correct, and probably the best that has yet been published. He properly rejects the case which has been attributed to Ried (whose name Dr. Otis usually misspells Reid), and corrects an error of Dr. Hodges, who placed an operation by the elder Textor among excisions for disease (numbering it 96 in his table), an operation which Dr. Otis here restores to its proper place among excisions for gunshot injury.

The second portion of the Circular treats of "excisions at the hip in the war of the rebellion." No less than sixty-three cases are here detailed, and reference made to a few doubtful cases which are not available for statistical purposes. Thirty-two of these cases were primary operations, with two recoveries; twenty-two, likewise with two recoveries, were intermediate; and nine, with one recovery, were secondary. The operators in the successful cases were Drs. Dement, Leet, Read, Mursick, and D. P. Smith. The patients in four cases recovered with more or less useful limbs, while in the other, though the limb "was useless for purposes of locomotion," it was the cause of no annoyance, the patient earning his living as a shoemaker for some months previous to his death, which was caused by diphtheria a year and a half after the date of the operation. The histories of these sixty-three cases have been compiled with great care from an immense number of separate reports and documents, and the zeal and perseverance which have been shown by Dr. Otis in this portion of his work cannot be too highly commended. One point upon which we must differ from him is as to the importance to be attached to lesions of the acetabulum in considering the propriety of excision in any individual case. Dr. Otis apparently looks upon this complication as contraindicating the operation (pp. 31, 48), though on a later page (123) he makes this rule less absolute. When we consider, however, that thirty-seven cases of this nature treated without any operation all proved fatal; that five cases where the acetabulum was injured (the femur escaping), similarly treated, all died (see page 106); and that in the only case of the kind that is known to have been followed by recovery[1] (that of Lt. Col. Strong, p. 105), a large fragment of the acetabulum was immediately removed by the attending surgeon, thus making the case one of partial primary excision, as far as the pelvis was concerned, we cannot help thinking that statistics certainly do not bear against operative measures, but rather, if applicable at all, in their favour. It used to be said that any lesion of the acetabulum, in cases of coxalgia, should prohibit attempts at excision, and, indeed, Mr. Syme (who, as Dr. Otis justly observes, anticipated Mr. Guthrie in recommending excision of the hip in gunshot injuries) declared that on account of the frequency of acetabular involvement in cases of caries, "there can be no hesitation in regarding the operation as decidedly improper." Yet now,

[1] The record in Dr. Schönborn's case (p. 60) merely says "it is quite probable that the acetabulum was fissured."

thanks to the labours of Hancock and others, we know that the whole floor of the acetabulum may be removed, and, indeed, the entire bony partition between the hip-joint and the interior of the pelvis taken away, without invading the true cavity of the latter. In fact, as we have shown elsewhere (*Penna. Hosp. Reports*, vol. ii. p. 151), the results of total, have been quite as favourable as those of partial excisions, while one of the latest writers on the subject (Dr. Eulenberg) considers the former less fatal than when the femur alone is involved in the operation.

Where there are not sufficient facts on which to found a positive opinion, it is always allowable to reason by analogy; and hence we must consider that in the present state of our knowledge of the subject, pelvic lesions limited to the acetabulum, so far from forbidding operative interference, must rather be considered as urgently calling for it, and should form an additional incentive to the surgeon to resort to either excision or amputation, according to the degree of injury to the femur and adjoining parts.

On page 23, the following sentence is quoted from a report by Prof. McGuire, without contradiction, and we must therefore suppose with approval:—

"It is chiefly to these causes: want of facilities for proper after-treatment, frequent necessity for the removal of patients, tendency to hospital gangrene, pyæmia, etc., and the frequently bad sanitary condition of soldiers in the field, that the greater success of excision of the coxo-femoral joint for disease, than when performed for gunshot injuries, is to be attributed."

A still more important reason for this difference, is the different age at which the operation is usually performed in the two classes of cases. The average age in 45 of the cases recorded in Circular No. 2, in which this point is noted, is a little over 27 years, and as we have shown in the paper already referred to (*loc. cit.*, p. 149), excision of the hip-joint for disease, in persons as old as this, is by no means a very successful operation.

The third portion of the Circular gives details of 274 cases of injury of the hip-joint, treated during our war by temporization, that is, without either excision or amputation. Of these, 122 were "cases of alleged gunshot injury of the hip-joint with fracture of the head or neck of the femur," and of these but eight are said to have recovered. Even in these cases, the record is somewhat doubtful, but giving the advocates of non-operative treatment the benefit of the doubt, there remains the frightful mortality of over 93 per cent. If we include 37 cases where the acetabulum was also involved (and it is fair to do so, for similar cases were subjected to excision), the death-rate is raised to nearly 96 per cent.

A few additional cases of coxo-femoral amputation for gunshot injury have been collected since the issue of Circular No. 7, S. G. O., 1867, and the number available for statistical purposes is thus increased from 161 to 183. With Dr. Otis's criticism upon our own case of hip-joint amputation (p. 111), it is probably scarcely necessary for us to say that we entirely disagree. We have given above our reasons for believing that lesions limited to the acetabulum by no means contraindicate resection, and, as justly observed by Mr. Holmes, and as every surgeon who has performed both operations on the living subject must acknowledge, it is much easier to deal with the cotyloid cavity between the flaps of a stump than through the narrow and deep wound of an excision.

We may now follow our author in summing up the statistical results of all that has gone before, and in endeavouring to show what course should

be adopted in the future by those who may have occasion to treat this most serious class of injuries.

Eighty-five[1] cases of hip-joint excision (including ten which have either occurred or been reported since the close of the war) show the following results :—

	Cases.	Died.	Recovered	Death-rate.
Primary	39	36	3	92.3
Intermediate	33	30	3	90.9
Secondary	13	11	2	84.6
Aggregate . . .	85	77	8	90.6

One hundred and eighty-three hip-joint amputations resulted as follows :—

	Cases.	Died.	Recovered	Doubtful.	Death-rate.
Primary	79	75	1	3	98.68
Intermediate . . .	76	70	6	..	92.10
Secondary	20	13	7	..	65.
Reamputations . . .	8	4	4	..	50.
Aggregate . . .	183	162	18	3	90.[2]

The mortality in cases treated without operation is, as we have already seen, 93 per cent., or, if cases where the acetabulum was involved are included, nearly 96 per cent.

What course then should be adopted in a case of recent gunshot injury supposed to involve the hip-joint? Obviously the surgeon should at once cut down upon the part and extract any loose fragments that might be found; then, if the joint were really involved, proceed at once to perform a primary excision, or, if other circumstances should require it, an amputation. Primary excision is therefore *the* mode of treatment (*par excellence*) to be recommended in cases of gunshot injury of the hip-joint.

By the time that the intermediate or inflammatory stage has been reached, a considerable number of cases will have been eliminated by death; but, should the surgeon not have an opportunity of seeing his patient before this stage has come on, excision still offers a better chance than either amputation or non-operative treatment. Of the comparatively few cases that survive to reach the secondary or post-inflammatory stage of their injuries, the proper treatment is somewhat more doubtful. As a mere numerical question, the chances are better after an amputation; but it is a well-established maxim of surgery that to save a limb, almost any risk is justifiable. Hence in such a case, if the constitutional state of the patient

[1] The omission of Ross's case, which was fatal (*see* above), would reduce the number to 84, and thus slightly diminish the death-rate.

[2] Doubtful cases omitted in computing percentages.

and other circumstances were favourable, it would, we think, be right to give conservative surgery the benefit of the doubt, and excise rather than disarticulate. There are, however, as justly remarked by Holmes, certain patients who are so exhausted and worn down by profuse suppuration, bed-sores, diarrhœa, and what not, that they could not possibly survive the necessarily long invalidity which would be entailed by an excision, and yet to whom a skilfully performed amputation would give a chance of life which the surgeon would be wrong to deny them. Such a case was that in which we ourselves felt it our duty to operate (*see* No. of this Journal for Jan., 1869, p. 94), and such cases will unquestionably occur from time to time to every surgeon engaged in the general practice of surgery. These are cases in which, as Hennen phrases it, we must "coolly form our calculations in human blood," and strike a balance between certain death and the "tremendous alternative" of hip-joint amputation.

We have thus terminated our examination of Dr. Otis's handsome volume, which, we think our readers will agree with us, is of very great interest and importance. We could wish that the tone of the writer was a little less positive, and a little more tolerant of those who have the misfortune to differ from him in opinion. We have thought it our duty to point out one or two inaccuracies in Dr. Otis's own work, and yet we should be very sorry to apply to him the judgment with which he judges Professor Pirogoff and Dr. Gross (p. 64), and say, "Thus a proper estimate may be placed upon the value of the evidence which it is not practicable to examine in detail, adduced by [this author] these authors." Disputed points of surgical science are not to be settled in General Orders, and we cannot but think that Dr. Otis's facts and deductions would come with even more conclusive effect than they now do, upon the general professional mind, were they couched in a form, perhaps less military, but at least more considerate of the feelings or even prejudices of others.

In conclusion, we would beg to express our gratification at, and high appreciation of the very great and wise liberality with which these invaluable publications of the Surgeon-General's Office are distributed. Not only are they sent to editors of medical journals, and deposited in public libraries, but they form marked and highly-prized ornaments on the humble book-shelf of many a hard-worked private practitioner, who has no claim to them beyond his common interest in our free, popular government, and the share which every medical man who reads anything, must possess in the republic of letters and universal science.

The present Circular, like its predecessors, is adorned with several beautiful lithographic plates, and many well-executed wood-cuts. J. A., Jr.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIII.—*Transactions of the Clinical Society of London.* Vol. I. 8vo. pp. xxiv., 197. London: Printed for the Society by Spottiswoode & Co., 1868.

THE Clinical Society of London was instituted, its constitution says, "for the cultivation and promotion of the study of Practical Medicine and Surgery, by the collection of reports of cases of interest, especially of such as bear upon undetermined questions in Pathology and Therapeutics."

The Society chose for its first president Sir Thomas Watson, who, in a short address, in which he appropriately acknowledges the compliment, expresses the hope that the Society will be the means of bringing about what he considers the great need of the times—the proper knowledge for the application of remedies for the cure or relief of disease. While the anatomy and pathology of the human body have been carefully studied, and while we have attained to a great degree of perfection in the detection and diagnosis of disease, we are still frequently unable to apply remedies scientifically in its treatment. Nothing shows this more clearly than the numerous discussions and differences of opinion which have arisen, and are still arising, as to the proper treatment of certain diseases and as to the modes of action of medicines. He hopes that among the good results of the Society may be greater accuracy of observation, and that among its members may be some who, in the course of the debates, may be able to throw some light on the course of different diseases uninfluenced by any treatment; or, in other words, will teach us the natural history of disease, and evolve from all that is asserted of the action of medicine that which is alone strictly true. This may be done, he thinks, if, in every case in which a new medicine is tried, its effects were carefully noted and candidly reported, and discussed at the meetings of the Society. If this were done, there is no reason why the therapeutic department of medicine should not be brought up more nearly to a level with other branches which are strictly ministerial and subservient to it, and the Society will hereafter be gratefully remembered as the starting-point of a vast and solid improvement in that which is the special office of our own profession in the world—the scientific and intelligent exercise of the divine art of healing.

Dr. MORELL MACKENZIE reports four cases of *Exophthalmic Goitre*, all of which seem to have come under his care, in consequence of the swelling of the throat; the palpitation of the heart and other symptoms not having caused apparently so much annoyance. The patients were all women, and all became affected with the disease in early life. As symptoms not generally noted, but present in these cases, may be mentioned the occurrence of moisture in the eyes and falling of tears on the cheek, a tendency to diarrhœa, and, in one of the cases, dysphagia, caused by the pressure of the enlarged thyroid gland. In all of the patients the menstrual function appears to have been regularly performed, although in some instances the discharge seems to have been scanty. In two, ophthalmoscopic examination, made by a competent observer, led to the discovery of no disease of the optic disks. In one case, the administration of tincture of digitalis, ♏xv thrice daily, was attended by marked improvement; in the second case it was of no service; the third proved fatal, and the fourth is still under treatment. In the *fatal case* the appearances of the brain and spinal cord are thus described: "The substance of the cerebral tissues was not unnaturally soft; nor was there any clot or embolism anywhere; but the corpora quadrigemina and the medulla oblongata—particularly its posterior part—were very soft, and, on minute examination, displayed the usual appearance of com-

mon softening." The patient, five days before her death, had maniacal fits, and just defore her death a mild convulsion, both of which were probably produced by the sanguineous fluid which was found (to the extent of a drachm or two) in each lateral ventricle, and by the softening of the medulla oblongata. The heart seems to have been healthy, with the exception of some atheroma of the mitral and aortic valves, together with some thinness of the latter and of the coats of the aorta and pulmonary artery. The thyroid gland was much enlarged, and its right lobe passed round behind the œsophagus and came in contact with the spinal column. Its structure showed hypertrophy of the cellular elements. The inferior thyroid arteries were much enlarged. The minute examination of the spinal cord, brain, and ganglia was confided to Mr. Lockhart Clarke, who has not yet made a report.

Dr. Arthur Trehern Norton reports a case of *Elephantiasis of the Leg*, of ten years' standing, cured in ten months by the application of a tight bandage. The patient's leg began to enlarge when he was 14 years of age, and continued to do so up to the time of the commencement of the treatment, when, unfortunately, its size was not noted. "The enlargement commenced abruptly below the knee, with an even tabulated surface, and terminated abruptly above the ankle, but overlapped that joint and rested upon the dorsum of the foot. The parts were dense, hard, and scaly, but not much fissured. The enlargement caused no pain, but was productive of a sense of weight and fatigue, and became a considerable impediment to progression by striking the sound limb when moved."

Dr. Hermann Weber makes the report of *Two Cases of Sudden Death from the Nerve Centres in Rheumatism with Excessive Temperature before Death* the nucleus of a very interesting communication to the Society. Both of these cases appear to have been of moderate severity until just before death; the first indication of a complication being a slight alteration in the character of the first sound of the heart, which was soon followed by great restlessness, an increase in the quantity of urine, a disposition to diarrhœa, deafness, and some tinnitus aurium; these, in their turn, giving place to violent delirium, speedily passing into coma with all its accompanying conditions, and excessive rise of the temperature of the body. After death decomposition occurred unusually early. The post-mortem examination of one case revealed the presence of endocarditis, congestion of the lungs, enlargement of the spleen, and congestion of the brain and its membranes, with minute ecchymotic patches in the pia-mater, in the pericardium, endocardium, and other membranes; the blood being very dark and exhibiting only an imperfect tendency to coagulation. These symptoms and post-mortem appearances Dr. Weber attributes to a paralysis of the nerve centre or centres which preside over the heat-regulating function, and it is well known that this excessive elevation of temperature (109.5 Fahr. in one case) seldom occurs except in cases of death from disease of the nerve centres. Others have been disposed to look upon the paralysis not as the cause of the excessive heat, but as the effect of it; but it is obvious that, so long as the heat-regulating function is properly performed, the temperature of the body can never become excessive, and it is only therefore when exhaustion has taken place that this condition will arise. An instance of this is furnished by the familiar example of sun-stroke, in which the temperature of the body does not become excessive until the brain is implicated; and it is impossible to read the account of the autopsy of the case in which a post-mortem examination was made without being struck with the great similarity of the appearances to those furnished by cases of sun-stroke. Dr. Weber further adduces as proof that the excessive heat is not the cause of all the other symptoms the case of a convalescent patient, who was about to leave the hospital, and in whom fatal symptoms, accompanied by a great increase of temperature, suddenly arose; it is, of course, not likely that the heat of the blood was very great at the time of his intended discharge, but infinitely more probable that the temperature rose in a short time in consequence of some derangement of the nerve centres. It has been proven, moreover, by the experiments of Tscheschechin that section of the pons, just at its junction with the medulla oblongata, is almost immediately followed by an increase of tempera-

ture. the respiratory movements and the contractions of the heart becoming at the same time very much increased in frequency.

The treatment of cases of acute rheumatism, in which the premonitory symptoms of restlessness, excessive micturition, and diarrhœa have occurred, should embrace all means which tend to keep the patient at perfect rest; but whenever the temperature of the body becomes inordinate, the most powerful agents to abstract the heat should be at once employed; and this is equally true of other diseases whenever the thermometer indicates a high degree of heat.

In this connection it may be well to notice another communication by Dr. WEBER, entitled *Two Cases of Lesion of the Cervical Portion of the Spinal Marrow, exhibiting the Phenomena of Heat Stroke.* The first case reported is that of a youth, æt. 19, who, while working in a crouching position, was struck on the neck by a large stone falling from a considerable height. Patient when taken up was insensible, but soon after vomited and recovered consciousness. At his own request he was immediately taken to a hospital, where he passed a large quantity of urine, and was subsequently obliged to empty his bladder every fifteen minutes. An hour after his admission restlessness and then delirium supervened, during which he had several passages from his bowels, and the thermometer placed in his axilla indicated 109°.58 F. Four and a half hours subsequently complete coma with excessive frequency of the pulse and respiration came on. The temperature of the axilla taken just before death, which occurred eight and a half hours after the accident, was 111°.2 F.

The autopsy showed fracture and incomplete dislocation of the third, fourth, and fifth cervical vertebræ, and considerable injury of the corresponding portion of the spinal cord, especially of the posterior half which was transformed into a dark red pulp; the medulla oblongata and brain were congested, soft, and moist, the arachnoid rather opaque; hemorrhagic spots were found under the pericardium and endocardium; the blood was fluid, and the right ventricle distended.

The second case was that of a man æt. 25, over whose neck a cart had passed. The patient presented many of the symptoms detailed in the first case. The temperature of the rectum immediately before death, which occurred 17 hours after the accident, was 110° Fahr. At the post-mortem examination, fracture and partial dislocation of the third and fourth cervical vertebræ were discovered, and the corresponding portion of the spinal marrow was much crushed and almost transformed into a red pulp. The lungs were excessively congested and the heart was distended.

These cases "render it at first sight," Dr. Weber says, "more probable that in man at least, the seat of the regulating centres lies in the cervical portion of the spinal marrow; yet it is quite possible that these lesions influence first the brain and cause the symptoms in question only through this. The remarkable rise of temperature and the other phenomena of pyrexia, were at all events in both cases preceded by the impairment or abolition of the psychical functions of the brain. The fact taught by these cases, that the most intense pyrexia can be developed by lesion of certain portions of the nerve centres alone, without the previous existence of any morbid poison or any other change in the blood, is in favour of the view that the phenomena of fever or pyrexia are referable to nerve influence, that they are in fact nerve symptoms, and that the blood changes inseparable from fever are to a great degree affected by an altered nerve action, even in those processes where the admixture of a poison to the blood is the first link in the chain of morbid conditions."

Two Cases of Acute Rheumatism with an extremely high Temperature just before Death, are reported by Dr. CHARLES MURCHISON, and a similar one by Dr. J. Burdon SANDERSON, in all of which the symptoms during life and the appearances after death were strikingly similar to those already noticed.

Dr. EDWARD HEADLAM GREENHOW reports four cases of *Intermittent or Paroxysmal Hæmaturia.* The patients were three males, aged respectively 31, 8½ and 34 years, and one female, aged 35 years, who, after exposure to wet and cold, either had rigors or chilly sensations, which were speedily followed by the passing of urine more or less discoloured by blood. None of the patients had ever been exposed to malarious influences, and the affection, although pa-

roxysmal, was not distinctly periodical. The hot and sweating stages were, moreover, generally absent. In one of the cases the hæmaturia coincided with a spongy condition of the gums, but, although Dr. Greenhow thinks the patients were labouring under some form of dyscrasia, it was evidently not scurvy or purpura, as there was nothing to point to either of these diseases in the other three cases. Oxalic acid was found in the urine of all, and the sallow, unhealthy aspect of the patients was not unlike that attributed by Dr. Prout to the oxalic acid diathesis, and it will be remembered that hemorrhage from the kidneys is mentioned by him as a concomitant symptom of oxaluria. The urine was referred to a committee consisting of Drs. Dickinson, Greenhow, and Pavy, who made microscopical and chemical examination of several specimens. It was generally found to contain albumen, which, when precipitated, carried down with it the colouring matter; in some specimens blood corpuscles were found, but generally only fine yellowish-red amorphous granules, together with crystals of oxalic acid, epithelial cells, occasional casts, &c. The cases all did well under the use of sulphate of quinia and tincture of the chloride of iron.

Dr. Reginald Southey communicates a case of *Abscess in or about the Kidney Opening Externally*. The patient, a man æt. 32, in consequence of a gonorrhœa contracted eleven years before, became affected with stricture of the urethra, which interfered with the proper emptying of his bladder, and occasioned catarrh of that organ. A short time afterwards a deep-seated, smooth outlined tumour, hard to the feel and painful upon pressure situated in the left iliac region, and extending into the left lateral between the upper edge of the ilium and the false ribs, was detected. It was, moreover, accompanied by pain in the region, and extending down into the groin, and on the outer and front side of the thigh. The urine was passed frequently in small quantities and occasioned pain in its passage. Fluctuation was discovered in the tumour, and an exploratory opening being made by Mr. Holden, pus was detected; the opening was enlarged; five oz. of pus came away, and it continued to be discharged at the rate of three oz. daily. Pus, blood, and mucus shortly afterwards appearing in the motions, a communication between the abscess and rectum was diagnosticated. Recovery finally took place, but there were symptoms which indicated that the bladder had been drawn up by the contraction of the abscess, and its capacity reduced. In conclusion, Dr. Southey says that he is uncertain whether the abscess occurred in the substance of the kidney or in its neighbourhood, but is inclined to think in the kidney itself. There was nothing in the history of the case which made the diagnosis of psoas abscess allowable.

Dr. C. Hilton Fagge makes some cases of *Parasitic Disease of the Nails, associated with different Parasitic Affections of the Scalp and Body*, the subject of a communication to the Society. Three cases of the above affection are reported. In the first, favus was pretty generally diffused over the whole body; in the second and third there was herpes tonsurans of the scalp. The affection of the nails, however, presented the same characteristics in the three cases, and differed from that described by Meissner and Virchow. The patient with favus, a girl æt. 11, stated that the nail of the little finger had been affected only two or three weeks, and although her statement at first seemed incredible, it was confirmed subsequently by the rapid extension of the disease; the nail presented a peculiar yellow discoloration, which stopped suddenly one eighth of an inch from the root. The diseased part was dry and cracked, and it was detached from its bed, and only extended about half way towards what might have been the position of its free edge. The yellow discoloration had reached the posterior end of the nail in ten days. The diseased part of the nail could be cut away with a scalpel much more readily than the healthy. A microscopical examination showed that it contained beautiful specimens of the achorion. "Spores and tubes lay within the nail substance, interspersed between, and penetrating within its cells." This description is substantially that of the two other cases. The treatment adopted was the scraping away of the nail as far as possible, followed by the constant application of a solution of sulphate of soda ʒj to ℥j. It is worthy of note that a general application of a solution of ℥j of carbolic acid in ʒvij of glycerin to the patches of favus caused vomiting and other symptoms of poisoning. Dr. Fagge sees in this similarity

of the nail affections confirmation of the views of Hebra and Tilbury Fox, that the fungi in different parasitic cutaneous diseases are not really distinct species, but mere varieties capable under certain unknown conditions of passing the one into the other.

In speaking of epilation, Dr. FAGGE says he has made an observation which he believes is original. It is well known that the fungus penetrates the hair, but the condition of the fungus tubes in the root of the hair has not been carefully described. "They are here exceedingly delicate, so that they are overlooked by an inexperienced observer, but they have a peculiar double contour, which is very characteristic. They terminate in free, closed, rounded extremities. These are, in every specimen, seen to be within the soft substance of the hair's root; it is, therefore, evident that while the hair is constantly growing and pushing outwards, the fungus-tubes are themselves growing in the opposite direction. In cases in which active local treatment is being carried out, it is quite rare to find spores (or any of the well-known appearances of the achorion) in or about the hairs affected in this way. It would seem that the fungus is only able to maintain a bare existence under such circumstances; but its vitality is preserved, and it is ready to germinate actively as soon as conditions more favourable for its growth arise." This will explain, of course, the frequent failure of the so-called parasiticides and the success of epilation.

Dr. WILLIAM MARCET reports *A Case of Temporary Loss of Voice Successfully Treated by Galvanism*. In this case the patient was a man, æt. 47, a hawker, who lost his voice, which was represented to have been unusually powerful, after a severe fit of coughing. After the attack of coughing, which lasted three hours, swelling of his tongue and enlargement of the glands under the jaw were noticed. Soon after his power of speech became interfered with, his tongue was benumbed, and he had in great measure lost the sense of taste. Hemoptysis followed. A laryngoscopic examination showed nothing beyond a slightly pendulous condition of the epiglottis; the vocal cords were perfectly sound, but he was found not to have the power of raising the tongue against the palate, and upon attempting to do so was always seized with laryngeal spasms. The condition above described had continued for a year. A tolerably strong interrupted current from a one-cell Smee's battery was passed between the back of the tongue and the thyroid cartilage. After less than a quarter of an hour, the patient suddenly sung out, and apparently to his great delight, said "Yes," and shortly afterwards, "I can speak." As there was a suspicion that the man might be a malingerer. Dr. Marcet obtained the signatures of a number of respectable people, who all asserted that they knew that he had not spoken for a year. The committee to whom the case was referred found that most of the man's statements were confirmed, but that he certainly used his infirmity, whether real or assumed, for the purpose of soliciting alms from the charitable.

Dr. EDWARD HEADLAM GREENHOW reports *Two Cases of Motor Asynergy*, generally known as Progressive Locomotor Ataxia. Both of the cases present some unusual points, but the first is especially interesting on account of the patient's extreme sensibility to the slightest unexpected touch, causing sudden involuntary startings of the limbs, attended by a feeling of alarm. Thus the friction of a woman's dress, in passing, has almost thrown him down, and the accidental dropping of his diet card upon his bed has made him start up in a fright, or caused spasmodic retraction of his limbs. The same causes would occasionally produce the same result during sleep, but a stronger impression was generally necessary. If he was aware, however, that he was about to be touched he could generally control the convulsive movements, except when one patch of skin, about 2½ inches square, on the outer side of the right leg, in the territory of the cutaneous branches of the external popliteal nerve, was the point of contact. The case was further remarkable for the extent to which the sensory cranial nerves or nerve centres were implicated, whilst the functions of the cranial motor nerves were unimpaired. The senses of taste and smell, which are generally unaffected in this disease, were both of them to some extent lost in this case. The symptoms, moreover, showed that the spinal

cord, instead of being diseased only in the lumbar region, was degenerated throughout its whole extent.

Dr. Greenhow found that both of the patients improved under the use of nitrate of silver, and that belladonna and bromide of potassium seemed to be of service in one of the cases. Strychnia, even in small doses, never failed to increase the tendency to spasmodic startings of the limbs, and galvanism also appeared to aggravate rather than relieve the symptoms of this disease.

Dr. Thomas S. Hillier reports *Two Cases of Chronic Ascites in Children*, in neither of which was there any reason to suspect cancerous or tuberculous disease, or cardiac or renal trouble, and in neither was there any disturbance of the health beyond that due to pressure. Dr. Hillier was disposed to think that obstruction was the cause of the accumulation, and not cirrhosis of the liver, which is, of course, very infrequent in children. This obstruction, he thought, might have been seated in the main trunk of the venæ portæ, in the transverse fissure of the liver, or in the large hepatic veins near their entrance into the vena cava.

One of the cases passed from under the observation of Dr. Hillier; in the other case the operation of tapping was performed. The liquid which was thus obtained was found by Dr. Marcet not to differ from inflammatory exudation, and he was in consequence disposed to attribute the ascites to inflammation of the peritoneum. The child finally died, and the autopsy revealed the presence of more disease than appears to have been suspected by Dr. Hillier, for there was caseous degeneration of the bronchial glands, pericardial adhesions completely obliterating the cavity of the pericardium, cirrhosis of the liver, and finally peritonitis.

Dr. John Cockle and Dr. F. E. Anstie report a *Case of Supposed Congenital Aortic Disease*. No pulsation could be felt in any of the large arteries, and only a very slight one in the radial. The physical examination showed no increase of the cardiac dulness, an impulse in the normal position and of not unusual force, and healthy resonance over the lungs; but the existence of dulness in a patch of the chest, measuring $1\frac{3}{4}$ in. diameter, its centre corresponding to the sternal border of the second intercostal space, together with a thrilling impulse, which could be plainly felt and sometimes seen. There was also a systolic bruit plainly heard in the same position, with a tendency to propagation in the course of the large arteries. The second sound to the left of the sternum was unusually loud. This condition had lasted, it was thought, for at least ten years.

The committee, consisting of Drs. J. B. Sanderson and C. J. B. Williams, to whom the case was referred, did not find in it any certain evidence that it was congenital, and they, moreover, think that there was aneurismal enlargement corresponding to the dull patch, and probably some narrowing of the aorta beyond the dilatation. The symptoms of which the man complained the most were vertigo, palpitations, and pains in the head. Sphygmographic tracings of the pulse were taken by Dr. Sanderson, who found that its excessive smallness was associated with extreme hardness, for, although the extent of movement of the sphygmographic lever was very inconsiderable when the ordinary tension was employed (200 grammes), the effect was much increased when the pressure was augmented to 450 grammes.

Dr. C. Handfield Jones reports a *Case of Myelitis supervening gradually upon Concussion of the Spine*. A healthy countryman, æt. 23, tripped while carrying a load of slates along a plank and fell "strad-legs" across the plank upon his nates. He felt no inconvenience at the time, and continued to work for six weeks, but at the end of this time he began to feel pain in the lower part of his back, and sides of the abdomen and hips, and gradually lost the use of his legs. When he came under Dr. Jones' care he was able, while lying on his back, to extend his legs, but had no power to flex them, and violent tremor was excited in them by the attempt. The patient recovered under a treatment consisting in the administration of belladonna and ergot, subsequently abandoned for iodide of potassium, and this, in its turn, for bichloride of mercury. The chief interest in the above case, is its bearing upon some of the results of railway accidents. It is still a question whether compensation for injury should be

allowed, where it does not immediately become apparent, for there are many who do not admit that a concussion that produces apparently but little damage at the time, may set up an insidiously advancing inflammation of the spinal cord which may result in irreparable mischief. That such a result is possible, is, however, shown by the present case, in which there could not be the slightest suspicion that the disease was assumed. Dr. Jones has met with similar cases, and it will be remembered that Mr. Erichsen has adduced evidence which places the matter almost beyond discussion.

Dr. JONES also contributes another short article headed *Cardiac Hypertrophy of Obscure Origin; question as to the Existence of Renal Disease; remarkable Effect of Digitalis.* The chief interest in the above case seems to have been the effect produced by the tr. digitalis, which was given in ɱx doses every two hours when the patient was apparently dying. After it had been taken for a short time, the pulse reappeared at the wrist, and there was an improvement in all the other symptoms. Unfortunately, the digitalis was discontinued, and the patient died two days afterwards. Dr. Jones sees in this case confirmation of the view that digitalis is really a stimulant to the heart's action. Whenever it is used to depress, it must be given in very large doses, and then acts by paralyzing the heart.

Dr. J. BURDON SANDERSON, contributes a *Case illustrating the condition of the Circulation in Bright's Disease.* In this case the pulse was noted as small and soft, and it is Dr. Sanderson's purpose in this short paper, to show that this softness is apparent, not real. This he does by means of the sphygmograph. When the instrument was so graduated that the pressure exerted by the spring on the artery was less than 200 grammes, the movement of the lever was small; when. however, it was increased to 400 or 450 grammes, it became much greater, the effect being at each observation in proportion to the pressure. In a natural condition of the circulation, the result of the experiment would have been the reverse, that is to say, the arterial movement would have been almost suppressed under a pressure of 450 grammes, but would have gradually increased as the pressure was diminished to 200 grammes. Just before death, when to the finger the pulse appeared much fuller and stronger than before, the sphygmograph showed that the resistance of the artery to compression was impaired, for the greater weight now suppressed the pulsations altogether. This paper is illustrated by diagrams of the tracings of the sphygmograph.

Dr. ANDREW CLARK reports a *Case of Fibroid Phthisis.* The summary of this case shows the patient to have been a woman, twenty-eight years of age, married, but childless, sprung from healthy parents, said to have been temperate, and to have enjoyed good health, till three years before she came under observation, when she had ascites, from which she recovered in eleven months. She began in July, 1867, to suffer from vomiting, prostration, cough, occasional hæmoptysis, muco-purulent expectoration, albuminuria, œdema of the extremities, and occasional diarrhœa, and becoming rapidly worse, died comatose on December 5, of the same year. A post-mortem examination revealed, as had been predicted during life, fibroid disease of left lung with dilated bronchi, cheesy deposits and cavities resulting from their disintegration, enlargement and waxy degeneration of the liver, granular contraction and slight waxy degeneration of kidneys, ulceration of bowels, enlargement of the mesenteric glands, fibroid degenerations of, or deposits in, other organs and tissues.

The patient, the summary of whose history is given above, appears to have been "the subject of constitutional fibroid degeneration (fibrosis), which, affecting lightly now one organ or texture and then another, at last localized itself in an especial and destructive manner in the left lung. It is, therefore, described as a case of 'fibroid phthisis.' In this term the author proposes to embrace all those cases, whether local or constitutional, which are anatomically characterized by the presence, in a contracted and indurated lung traversed by more or less dilated bronchi, of fibroid tissue, and of a tough fibrogenous substance, together with cheesy deposits or consolidations, and usually small cavities commonly found about the middle and lower parts of the affected organ." Tubercle was excluded from the diagnosis, by the absence of any structural disease in the right lung, and by the fact that the left apex was presumed to be free. There was,

moreover, no great hurry of the circulation; no evening fever; no continued elevation of temperature; and so far from there being any profuse perspiration, the skin was dry and inactive until the advent of death. The breathing also was quiet and tranquil.

Dr. Clark insists upon the necessity of distinguishing between the various conditions of the lungs which have been confounded together under the name of phthisis; for until this is done, it is obvious that our advance in therapeutics will be slow, and our management of these peculiar states uncertain and sometimes mischievous. It is true that they frequently prevent similar symptoms, as these are indicative rather of the amount of interference with the functions of the lungs, than the pathological process itself; but there are, fortunately, also distinctive symptoms, and much of the present confusion could be avoided by a careful and unprejudiced study of each case.

We have endeavoured, in the above, to give the reader a satisfactory analysis of the medical papers contained in this very valuable volume. They are of course of varying interest, but there are few of them which are not of unusual merit. J. H. H.

We shall now consider those articles which are especially addressed to surgeons.

Mr. C. F. Maunder reports a *Case of Partial Resection of the Shoulder-joint.* The patient was a woman, aged 62, who had repeatedly suffered from rheumatism. A fourth attack, in a subacute form, occurred six years before she came under Mr. Maunder's care, and during that period her right shoulder had been always more or less crippled. Eight months before, an abscess, connecting with the joint, opened spontaneously, and since then she had gradually failed in health. A partial excision of the joint was performed, the head of the humerus and the lower half of the glenoid cavity being cut away with bone forceps. The exsected parts were rough and devoid of cartilage, and the neck of the humerus bordered by several osteophytes. During her convalescence she suffered from a fresh attack of rheumatism, affecting the right wrist and elbow, but in spite of this made a quick and permanent recovery, with a very useful limb. In deciding upon the operation Mr. Maunder entertained the "opinion that the patient was the subject of suppurative disorganization of the shoulder-joint, associated with more or less ulceration of cartilage and caries of bone." In the light of the patient's history and the condition of the exsected parts, it appears to us, however, that the case should rather be considered as one of chronic rheumatic arthritis, an affection which is occasionally, though very rarely, accompanied by suppuration, and for which excision has been several times successfully practised. The author's remarks as to the "time when" for excisions of the shoulder, as compared with those of the elbow, are extremely just. A cure by anchylosis in diseases of the latter joint is to be deprecated, and hence excisions may be properly resorted to at an earlier period than in the case of the shoulder, where a stiff joint will be greatly compensated for by the mobility of the scapula.

Four Cases of Vascular Ulcer of the Cornea, recently Treated by Seton in the Skin of the Temporal Region, are related by Mr. W. Spencer Watson. More or less improvement followed in each case as soon as free suppuration was established. In two cases there was rather free venous hemorrhage along the track of the seton, requiring the application of a firm compress.

Case of Femoral Aneurism; Rupture of Sac; Old Operation; Recovery. By J. Cooper Forster. The patient was a man 29 years of age, and the aneurism was seated in the upper part of the left thigh. Compression having failed to effect a cure, it was proposed to tie the external iliac artery, but the sac of the aneurism giving way shortly before the time fixed for the operation, Mr. Forster in consultation with Mr. Hilton decided to employ the "old operation" instead. Hemorrhage was prevented by the use of the aortic tourniquet, and the operation accomplished without any difficulty; the patient made a rapid recovery. "The treatment of diffused aneurism," says Mr. Forster, "should, I think, vary according to the artery involved. . . . A femoral aneurism when ruptured is reached with ease, being comparatively superficial—the vein corresponding to the artery is beneath it or behind it in the greater part of its course and large

nerves are away from the vessel. Whereas in the case of the popliteal aneurism, when ruptured, the artery is very deeply situated, and therefore part of the aneurism also—the vein corresponding to the artery is superficial to it and therefore may be implicated by the aneurism, and a very large nerve is superficial to the artery and may likewise, with the vein, be wounded in making the necessary incisions into the sac. For these reasons I conclude that the practice of amputation, which has been adopted in the cases of ruptured popliteal aneurism, should not be used in the case of femoral aneurism." To which we may add that the great mortality which attends amputations of the upper part of the thigh should be an additional inducement to the surgeon to resort in preference to the "old operation" in cases of diffused aneurism in this situation.

Mr. THOMAS SMITH reports a case of *Excision of the Knee-joint eight years after the Operation.* The patient was a lad of seventeen, the operation having been done when he was nine years old. The resected limb was five inches shorter than its fellow, though a portion of this difference was due to bending of the limb, which presented a condition approaching to that known as genu valgum. The real shortening was three and a half inches, an increase of one and a half inches during the eight years which had elapsed since the excision. As remarked by the author, this was a very satisfactory result, in view of the fact that the epiphysial cartilage had been somewhat encroached upon in the operation.

Case of Chronic Rheumatic Arthritis of the Left Hip, in a young Man nineteen years of age, and now under treatment, by CARSTEN HOLTHOUSE.

On a Case of Doubtful Chronic Rheumatic Arthritis, by CARSTEN HOLTHOUSE.

In the first of these cases, the youth of the patient was of course an interesting circumstance, as the affection is usually one of advanced life, seldom occurring in persons less than fifty years old, and hence at one time called by Dr. Adams, who has well described it, "morbus coxæ senilis." Mr. Holthouse treated his patient with continuous extension, applied by means of a weight, with marked benefit. The shortening of the affected limb in these cases is more apparent than real, and is rightly attributed by Dr. Adams, in a great measure, to the existence of pelvic and spinal distortion; "but he does not seem to be aware," says Mr. Holthouse, "that both the elevation and the curve are merely secondary results of an adducted and fixed femur, just as that anterior pelvic depression and lumbar incurvation termed lordosis, are secondary results of the thigh being fixed in a position of flexion. I may, perhaps, be allowed to illustrate this subject further," the author continues, "by what we observe in ordinary cases of hip-joint disease. In one case we find the pelvis lower on the diseased side and the spine correspondingly curved, because the thigh, being fixed in the position of abduction, cannot be brought parallel with the other, except through this pelvic and spinal distortion. In a second, it is higher on the diseased side, because the thigh being fixed in a state of adduction equally necessitates for its parallelism a distortion the reverse of the former. In a third, it is depressed anteriorly [lordosis] because the flexed and fixed femur would otherwise be a bar to erect locomotion." Mr. Holthouse's case was referred to a committee of three, one of whom, Mr. Heath, agreed with the reporter that it was a case of chronic rheumatic arthritis, while the others, Messrs. Bryant and Maunder, regarded the changes which had taken place "as due to inflammation of the head and neck of the thigh bone not necessarily rheumatic."

Mr. Holthouse's second case occurred in a woman, aged 52, and while presenting many of the appearances characteristic of chronic rheumatic arthritis, had at the same time certain symptoms which might seem to warrant the belief that the disease was of nervous origin. This case may be profitably compared with one of somewhat similar character reported by Dr. W. W. Keen to the Pathological Society of this city, in which a *post-mortem* examination revealed marked changes in the spinal cord (*Proc. Path. Soc.*, in number of this Journal for July, 1869, pp. 128–131).

A Case of Ectopia Vesicæ is related by Mr. THOMAS SMITH. The patient was a female child of $4\frac{1}{2}$ years. "The most interesting feature of the case was . . . .

that the prolapsed surface of the bladder presented a cutaneous integument as low down as the orifices of the ureters, thus largely diminishing the inconvenience of the deformity, since one serious annoyance usually consists in the pain caused by the friction of the clothes on the exposed mucous membrane of the bladder." A drawing was exhibited of another girl, in whom the same deformity existed, and in whom a similar change of mucous membrane into skin had taken place, a condition which Mr. Smith said he had never observed in males.

Case of Cancer of the Œsophagus, with External Openings, and involving the Larynx, by CHRISTOPHER HEATH. The disease was situated at too low a point to allow of œsophagotomy, and as the dyspnœa was of a spasmodic character (until just before the patient's death), and therefore probably due to nervous involvement rather than to absolute pressure on the air passages, Mr. Heath wisely did not urge the performance of tracheotomy. Unfortunately no *post-mortem* examination could be obtained.

Operation for Varicocele, by HENRY LEE. The operation in this case was that which Mr. Lee is in the habit of performing—namely, the subcutaneous division of the scrotal veins, previously isolated by the introduction of needles and the application of figure-of-eight ligatures. Secondary hemorrhage occurred repeatedly, the parts were attacked by erysipelas, and extensive sloughing and wide-spread destruction of the areolar tissue took place, convalescence not being established until about six weeks after the operation. "Unfortunate as were the results in this instance, it does not appear that the veins were in any sense implicated in the origin of the mischief. The first accident that occurred was arterial hemorrhage; the cellular tissue then became distended with blood; erysipelas, accompanied by decomposition of the effused blood, followed. Through all these changes and adverse circumstances the divided veins were commanded by the acupressure needles, their channels closed, and the absorption of decomposing matter or vitiated secretions by their means prevented." Large doses of the sulphite of magnesia were given in this case without any obvious effect upon the patient's condition.

Mr. LEE also reports a *Case Illustrating the Condition of the Femoral Artery after Acupressure for three days*. The patient was a man aged 35, whose thigh was amputated by Teale's method, and who died of tetanus on the sixth day. The femoral artery, which had been acupressed for three days, was filled with a firm, closely adhering clot. The lining membrane of the artery was red near its cut extremity, where it had been subject to pressure, but presented no sign of any effusion of lymph upon its surface. "I note this fact particularly," says Mr. Lee, "as an additional proof that the theory which was very generally received at the time when acupressure of arteries was first practised is incorrect. It was then and is now believed by many that, if the two sides of an artery are held in contact, they will unite. Neither clinical experience nor direct experiment support this view. The process of union goes on not where the vessel is compressed, but at its cut extremity. The acupressure needle, or the clot, or both combined, may effectually arrest the hemorrhage for a time, and thus allow the work of permanent repair to proceed without interruption at the end of the vessel; but they furnish a temporary obstruction only. The cut edges of the vessel are the parts which are permanently sealed. Thus, while acupressure may be practically an excellent means of arresting hemorrhage, the theory which supposes that it does so by producing adhesion of the opposed sides of the compressed vessel must, I apprehend, be abandoned." With regard to the employment of acupressure, Mr. Lee has been, upon the whole, satisfied with its result, though he has never been able to procure complete union in any case in which he has resorted to its use.

Effect of Acupressure on the Femoral and Profunda Arteries, by JAMES W. WEST, communicated by Mr. CALLENDER. A young woman, aged 26, submitted to amputation in the upper third of the thigh, and died fixty-six hours after the operation. The arteries, which had been acupressed, "were found to be perfectly occluded by the pressure of the needles, and to have within each of them a small fibrinous conical clot. No blood had been extravasated between the flaps."

On Tracheotomy as a Means of Cure in Chronic Laryngeal Disease, by THOS. BRYANT. From observation of the rapid repair which takes place in ulcers of the larynx after tracheotomy, even when performed, as it usually is, as a last resort, and when the larynx has already been spoiled as an organ of voice, Mr. Bryant is disposed to think that an earlier resort to the operation would be even more satisfactory in its results. "Let the surgeon," he says, "place the larynx by tracheotomy in such a position that as a respiratory and vocal organ it may, for a time, cease from its duties; give it, in the phraseology of the day, physiological rest, and deprive it of the irritating stimulating influence caused by the passage of a current of air over its ulcerating surface; secure the life of the patient during the repair of the local disease by the introduction of a tube into the trachea below the cricoid cartilage, and then may a good expectation be entertained that the laryngeal disease will rapidly disappear, and that the larynx will be preserved as an organ of voice as well as of respiration." The tracheal tube should, of course, be removed as soon as possible, and when required for a long time, should not be allowed to remain unchanged for more than three months.

MR. ARTHUR E. DURHAM reports a *Case of Comminuted and Secondarily Compound Fracture of the Femur, extending into the Knee-joint. Treatment by Carbolic Acid.* Mr. Durham's case has already been noticed in this Journal, in connection with some other papers on the subject of the "Antiseptic Method," in the number for July, 1869, p. 221. In this particular case the result was very satisfactory.

On the Use of the Chloride of Zinc Solution in the Treatment of Abscess connected with Diseased Joints.—MR. CAMPBELL DE MORGAN uses a solution of forty grains to the ounce, with the alleged effect of preventing decomposition and offensive odour, and promoting rapid healing. Having been, in common with many other surgeons, wofully disappointed in the effects of chloride of zinc as applied to external cancer, which our author highly extolled a few years ago, we shall long hesitate before taking his advice in making similar applications to suppurating joints.

MR. T. HOLMES records a case of *Excision of both Elbows.* The patient was a boy five years old, and the excisions were performed with an interval of several weeks. This is believed by Mr. Holmes to be the first published instance of double excision of the elbow, though it is probable that a similar case has occurred in the practice of Mr. Syme. The case shows: "1. That general strumous affection is no bar to the success of an operation of this kind, but that if more than one joint requires excision they may be excised in childhood with good prospect of a successful issue. 2. That in disease limited, or almost limited, to the soft tissues of the joint, a more useful arm is obtained by boldly removing the requisite and proper amount than by partial excision or the expectant treatment. By the 'requisite and proper amount' I mean the humerus just above the condyles, the ulna just below the coronoid process, and the articular head of the radius. Less than this amount should, I think, never be removed in this operation. 3. That the single straight incision is sufficient for ordinary cases, and if sufficient must be superior to the H-shaped incision, the transverse portion of which is liable to adhere to the ends of the bones and impede the restoration of motion, as Mr. Syme has pointed out, though he nevertheless prefers that incision."

MR. GEORGE W. CALLENDER describes an *Operation for Cleft Palate.* The plan recommended by him is to divide the operation into two stages, to be separated by an interval of several days. At the first sitting the levator palati muscle on either side is to be divided without the use of chloroform, and when the wounds are nearly healed, the muscles still being inactive, the rest of the operation may be performed. The principal advantage is the avoidance of hemorrhage during the second part of the operation, when, the patient being anæsthetized, trouble might otherwise be produced by the passage of blood into the trachea or stomach.

The present volume of the Clinical Society's *Transactions* contains the record of but part of a year (January to May), and yet as our readers may suppose from the short analysis which we have given, during these five months the

Society have had before them a very large amount of valuable and interesting material. Should future volumes not disappoint the expectations raised by that before us, we may look forward to a series which will compare not unfavourably with the publications of any other similar society past or present.

J. A., Jr.

Art. XXIV.—*St. Andrew's Medical Graduates' Association. Transactions*, 1868. Edited by Leonard W. Sedgwick, M. D., Honorary Secretary. 8vo. pp. xxiv.—262. London: John Churchill & Sons, 1869.

The volume before us will scarcely meet with the flattering reception accorded to its predecessor. It is true that some of the papers bear evidence to great care in their preparation, but this cannot be said of the majority of them, which are by no means of equal excellence with those contributed last year to the *Transactions*. The first part of the volume is taken up with a report of the business matters of the Association, and contains nothing of any interest to our readers. The annual address of the President, Dr. B. W. Richardson, although delivered to an audience composed not merely of members of the profession, but of the general public, ladies as well as gentlemen, and therefore not entirely medical in its character, will be read with gratification by every intelligent physician. It is entitled *On the World of Physic and the World*, and is a clear and comprehensive demonstration of the important relations existing between the former and the latter, and of the duties which each owes to the other. The writer also succeeds in proving that medicine has been tributary to many other sciences, and that there are few of them in which some valuable and important discoveries have not been made by physicians, who have ever been pre-eminently distinguished, as a class, for the energy and perseverance with which they have cultivated pure physical science.

Dr. T. Harrington Tuke contributes a paper *On the Criminal Responsibility of the Insane*, in the course of which he protests against the existing laws of England in regard to the responsibility of the insane for criminal actions. As the law stands at present, a prisoner may be satisfactorily proved to be intellectually insane, and to have committed the act of which he is accused under the influence of a delusion, but provided he knew the act was against the law of the land, or, in other words, recognized the distinction between right and wrong, his insanity would not be a reason for acquittal. A very rigorous interpretation of this law would subject many of the inmates of insane asylums to its penalties, and is fortunately very rarely insisted upon, for one of twelve judges who, in answer to the interrogations of the House of Lords, declared that such was the law, himself interceded for the life of a man, condemned under these circumstances, on the ground that he had delusions. This part of the law has also received the condemnation of the Medico-Psychological Association, for at a recent meeting it was unanimously resolved "that so much of the legal test of the mental condition of an alleged lunatic criminal as renders him a responsible agent, because he knows the difference between right and wrong, is inconsistent with the fact, well known to every member of this meeting, that the power of distinguishing between right and wrong exists frequently in those who are undoubtedly insane, and is often associated with dangerous and uncontrollable delirium." Dr. Tuke, however, does not advocate the entire irresponsibility of the insane, for he thinks that society must be protected, but that this can be efficiently done without hanging lunatic homicides. "Except in those rare cases in which, as in puerperal mania, murder is the result of distinctly temporary disease of the nerve-centres, insane murderers should be confined for life, although regarded, not as criminals to be punished, but as sufferers to be pitied, and, if possible, cured, though never again to be released."

An animated discussion followed the reading of this paper, all the speakers concurring with Dr. Tuke as to the necessity of modifying the existing laws on

this subject, and, as the first step towards this end, unanimously agreed to memorialize Parliament.

Dr. D. LLOYD ROBERTS read the report of *A Case of Imperforate Anus successfully operated upon.* In this case there was complete atresia of the anus and of about an inch and a half of the rectum, complicated, in all probability, with a fistulous communication between the rectum and bladder. There was no discoloration nor elevation of the skin; not even a pucker of the skin existed to indicate the anal orifice. The operation which was performed is thus described: "I made an incision in the median line of the perineum, in the position where I thought the rectum would be situated. Dividing the skin and subcutaneous areolar tissue in the direction of the coccyx, I continued the incision for about an inch and a half upwards into the pelvis. An exploratory examination was now made, first with the little finger, and then with a gum-elastic bougie. I thought I detected fluctuation, and accordingly plunged a large curved trocar and canula into the fluctuating spot. On withdrawing the trocar, I was gratified to see meconium, accompanied with a little blood, freely flowing through the canula. This was allowed to pass until it ceased to flow; upon which the canula was withdrawn. As the opening into the gut was too small, I passed a bistoury into the bowel through the previous incision, and commenced to enlarge it, directing the blade towards the sacrum. On effecting this, more meconium passed through the wound." Bougies were subsequently used to keep the opening from closing. The child did well; he was, however, noticed occasionally to pass water which was stained with feces. At seven and a half months of age he is described as a healthy, thriving, lively, unusually fat, big boy.

Success in this case is attributed to the early performance of the operation, before the occurrence of vomiting, and to the very slight disturbance occasioned in the position of the parts by the operation as compared with the method of Amussat. The rectum was so firmly fixed, that the force necessary to drag it externally so great a distance as an inch and a half would have given rise to much bruising and have caused a fatal result.

Dr. W. H. DAY contributes an article *On the Relative Value of Symptoms in the Diagnosis and Treatment of Disease.* As an analysis of this paper would not be of much interest to our readers, we shall content ourselves with quoting his conclusions:—

1. "That trifling symptoms are too apt to be overlooked, which may have a more important relation to the disease under which the patient suffers, than some more prominent symptoms which arrest the attention and are more peculiarly characteristic."

2. "That we should look at symptoms collectively, and assign to each its true value, in relation not only to its prominence, but to the position of the affected organ."

Diphtheritic Paralysis, and its Treatment by Strychnia, is the subject of a paper by Dr. HENRY MAUND, who reports a case. He is inclined to think that paralysis more frequently follows mild than severe cases of diphtheria; in fact, in the case which he reports, the sore throat was so slight that it did not arrest attention, and yet the subsequent history of the case proves, he thinks, that it must have been diphtheritic. It was not until a month after the affection of the throat that the patient had paralysis of the lower extremities and loss of the sense of sight and smell. The treatment adopted was the administration of strychnia in doses varying from one-twentieth to one-tenth of a grain three or four times daily, which was followed by great improvement. Sometimes immediately after the administration of the medicine the sight returned, to be lost again as its effect wore off. A complete restoration to health took place at the end of eleven months.

Dr. BOGG reports a case of *Fracture of the Sternum from Violent Muscular Contraction.* A man, while attempting to get some casks out of the hold of a vessel, felt something give way in his chest, and immediately afterwards was seized with difficulty of breathing. "His expression was anxious, respiration peculiar and painful, and there was a peculiar depression over the sternum, which was parabolic in form, the apex being immediately below the articulation of the fifth costal cartilage, the depressed portion was very mobile, and the

crepitus was distinctly audible. There was no bruising or discoloration of the integument." Under appropriate treatment, the patient was able to leave his bed at the end of the third week, but did not resume work until forty-five days after the accident.

Dr. Walter Whitehead contributes a paper on *The Physiological Effects of Chloroform*. The writer takes exception to the generally received statement that all anæsthetics act by cutting off or lessening the supply of oxygen to the brain. Acknowledging that nerve force cannot be considered as entirely identical with electricity, he nevertheless finds in many of their effects great similarity. A property common to them both is the necessity of a continuous insulated conductor. If we admit, he adds, this theory, it is evident that the conduction may be stopped by the removal of a single molecule, or by the separation of two contiguous molecules by an insulating body. Now, as chloroform permeates all the tissues, he thinks it acts by insinuating itself between constituent molecules of the nervous substance; and as it has been satisfactorily proved not to be a good conductor, it interferes with the mutual relation upon which the fulfilment of their function has been shown to depend. This explanation will, he thinks, render clear some of the peculiarities of the action of chloroform as distinguished from that of nitrous oxide; thus, for example, the greater length of time necessary to place a person under the influence of, and to relieve him of the effects of chloroform than of nitrous oxide.

Dr. Drysdale read a paper entitled *An Examination of the Effects of Residence in Alpine Regions, and of different Climates, in the Prevention or Cure of Consumption*, in which he states as his conclusion that there is no doubt that consumption is less frequent in heights than in valleys, and, to prove this, quotes the statement of a writer in the *British Medical Journal* for 1867. In the tropical zone, consumption, according to this author, may be regarded as rare above 7000 feet; in the warmer temperate zone, above 3500 to 5000 feet; in the colder temperate zone, above 1300 to 3000 feet elevation. We are not, however, told that which it is much more important that we should know, what effect elevation would have upon a patient with phthisis, for it scarcely admits of denial that the immunity of a place from phthisis may depend upon conditions not altogether favourable to the continuance of life in a consumptive patient. It is well known, moreover, that the effect of an elevated region is to produce acceleration of the pulse and respiration, and increase of the appetite; the latter would almost always be of service, the former often very injurious. Dr. Drysdale places very little reliance on the medicinal treatment of the disease, and thinks the best preventives are nutritious food and proportionate great exercise in free and open air. This, of course, should be joined with good ventilation in dwellings.

Among the ablest and most instructive papers in the volume is the honorary Secretary, Dr. L. Sedgwick's *Report on the Parasitic Theory of Disease*. As the author has himself given an analysis of his paper in the conclusions at which he arrives, we cannot do greater justice to it than in simply transcribing them. He finds then—

"That the organisms described as bacteria, vibriones, and bacteridia are equally, with the higher forms, as achorion, ustilago, &c., vegetable growths, and are probably embryonic conditions."

"That the same plant takes many forms, depending on its stage of growth, whether it be young or old, and depending on external circumstances, such as food, light and heat."

"That these plants propagate in all their forms by division of the individual and in their adult state, by reproduction of their kind."

"That there is not at present sufficient evidence to prove that they are propagated in any other way than from germs derived from a parent of like kind; and consequently that the theory of spontaneous generation cannot be accepted as a demonstrated fact."

"That the germs from which they arise are very minute, can be dried for years, can be frozen, and can be heated above the boiling point of water, and yet retain their faculty of growth when placed in proper conditions."

"That fermentation is produced by the growth of a plant in the substance

undergoing the change; and that it is highly probable that the different varieties of fermentation, vinous, acetous, lactous, &c., are produced either by different plants or by different stages of maturity of the same plant."

"That, as putrefaction differs from fermentation only in the character of the original fluid and resulting products, not in the nature of the chemical change, it is not likely that its essential cause is of a different kind."

"That local changes producing death of the part, and general changes producing death of the whole body, are produced by parasitic vegetables in plants and in the lower animals."

"That such parasitic vegetables are not developed from any part of the infected organism, but grow from germs originally introduced from without."

"That similar parasitic vegetables produce special diseases of the skin and of the bones in the higher animals and in man."

"That the growth of parasitic vegetables in the stomach produces unnatural fermentative changes with definite morbid symptoms."

"That a parasitic vegetable growth on the tongue is the cause of thrush and like diseases."

"That the evidence adduced in favour of the dependence of ague and cholera on parasitic vegetable growth is still insufficient for the proof."

"That the evidence adduced in favour of the dependence of syphilis and gonorrhœa on parasitic vegetable growth is very weak."

"That there is sufficient evidence to prove that diphtheria, croup, measles, and hooping-cough do not depend on the growth of parasitic plants."

"That putrefactive changes may be produced in the blood of a living animal when blood containing bacteria is injected into it."

"That analogy and experiment both point to the bacteria as the cause of this putrefactive change."

"That it is probable that varieties of putrefactive change may be produced either by different bacteria or by different stages of growth of the same plant, and hence the different classes of symptoms may arise."

"That such putrefactive change of the blood may occur in many different forms of disease, which, although differing in name and in primary local manifestation, are the same in nature."

"That the morbid symptoms are the direct result of the foreign chemical compounds, probably produced in the blood by the agency of the bacteria."

"That putrefactive change of the blood so induced, may occur in the progress of any disease, and produce destructive symptoms."

"That there is not sufficient evidence to show that specifically differing bacteria produce specifically differing diseases."

Dr. GEORGE CORDWENT furnishes some *Clinical Notes* to the volume. The first case reported is that of a healthy young woman, who was delivered of a child and the accompanying placenta while standing, and who died immediately after. Death was attributed to the rapid expulsion of the placenta and the subsequent admission of air into the cavity of the uterus before the mouths of the veins were closed. The coronary vein of the stomach was found distended with air, which was also believed to be present in the right cavities of the heart, although its presence was not positively made out. Dr. Cordwent thinks that this case shows the great danger attendant upon the hasty removal of the placenta, for although all the necessary conditions for the admission of air into the venous system will rarely be present at any one time, still that they may occasionally be so is shown by the present case; besides which, if there were poisons in the air the raw surface left by the placenta in the uncontracted uterus would furnish a very ready avenue for their absorption into the system. There is no more reason to assign half an hour as the proper time to wait for the spontaneous delivery of the placenta than five or six hours, and its rapid delivery is, he thinks, the cause in many instances of uterine disorders.

This is followed by the report of a case of persistent syphilitic taint in a man either destroying or affecting the offspring without apparently inflicting any injury upon the mother, either in womb or constitution.

The next case is that of a boy of 14 years of age who was gored by a bullock;

a laceration of about three inches and a half being made in the abdominal walls, through which six feet of the small intestines protruded. The bowel was uninjured and was very readily returned, and the sides of the wound were brought together by means of pins properly supported. Little or no constitutional symptoms supervened, even sleep being unbroken, except during the first night. The patient vomited the first night, but subsequently, although there was no hunger, there was no nausea, and no aversion to either food or drink. The bowels were moved naturally on the fourth day; on the fifth day the pins were removed.

A case of perineal calculus is also reported. The patient from whom it was taken was a man 75 years of age, who noticed a gradual impediment to the flow of his water, which was followed by the occurrence of perineal fistulæ. Surgical relief was declined, but in course of time the stone presented at one of the fistulæ and was removed without difficulty. A few months later the patient died, but no post-mortem examination was obtained. The calculus was four inches long in its convexity and one and one-eighth inch in diameter at its thickest part. It was of whitish colour, of little weight, porous on the surface but dense in the interior, and was composed of a large portion of animal matter, much triple phosphate, some phosphate of lime, and in places a trace of uric acid. Its weight is not given. A plate containing two figures accompanies the report of this case.

Dr. Spencer Thomson contributes a paper on *British Cholera, and Asiatic Cholera, considered in connection with the Fungoid Theory, and their Treatment by Castor Oil.* Dr. T. begins his paper with a reference to the fact that during the summers of 1846 and 1868, which were distinguished by their great heat, the deaths from cholera, diarrhœa, and dysentery exceeded the usual number, and that a temporary increase always accompanied a rise of temperature. He dissents from the generally received opinion that bilious vomiting and purging constitute the first stage of autumn cholera, or, as we should call it, cholera morbus, for he says that a careful examination will almost always disclose the fact that the patient has suffered for some time previously from feelings of lassitude, and inaptitude for exertion, physical or mental; depressed spirits, and headache, especially after meals; sleep disturbed by disagreeable dreams, or very heavy and constant insuperable drowsiness in the daytime, particularly after meals; gastric and hepatic functions much deranged, bowels irregular—occasionally griped; urine generally depositing highly coloured urates and uric acid. Cases characterized by the above symptoms all show an astonishing susceptibility to the action of mercurials, and recover if appropriate treatment be adopted. The bilious vomiting and purging, if unrestrained and excessive, it is true, may prove injurious, but are generally to be looked upon as an effort on the part of nature to rid the system of some noxious element, and this is believed to be carbon. To avoid the condition which is likely to culminate in cholera morbus, we are counselled to attend scrupulously to the cleanliness of the skin and to avoid an excess of carbon in our food, since it requires little demonstration to prove that between the carbon taken as food and the oxygen inhaled some proportion must be sustained; or that the quantity of oxygen inhaled depends upon the temperature and density of the atmosphere, and that heat diminishes the changes effected by respiration in the blood, a result which is further favoured by the indisposition to exertion, which naturally exists during hot weather. All the symptoms, moreover, indicate an excess of carbon in the blood, and are precisely similar to those present in poisoning from carbon gases.

On the other hand, Asiatic cholera appears to differ in its causes and in its symptoms, and to depend primarily upon some irritation of the ganglionic or cerebro-spinal system. All the best authorities on this disease distinctly maintain its nervous nature and deny the occurrence of premonitory symptoms, but assert that, on the contrary, it very often strikes down its victim in the midst of apparently good health. In fact, the symptoms which have been especially thought to show the analogy between the two diseases are essential to neither, and it is well known that cases of Asiatic cholera frequently terminate fatally before their occurrence. The post-mortem appearances in the latter disease also show its cerebral and spinal origin.

Dr. Thomson then discusses the fungoid theory of this disease, to which he

is disposed to attach some weight, but he does not consider it necessary to accept Dr. Hallier's explanation that the morbific agent first acts upon the alimentary canal, or as a blood poison, changing the composition of that fluid, but thinks that it is *a specific poison acting upon the nervous system*. He sees no more reason why a fungoid of rice should not produce the symptoms of cholera than that peculiar effects should attend the administration of ergot of rye, which is now known to affect the nervous centres in a marked way. In conclusion, he says, if Asiatic cholera be a disease in which the nervous system—no matter how acted upon—are the centres whence the characteristic symptoms are radiated, it is evident that the true remedies for the disease are to be sought for among those which act most directly upon these centres, and are to be introduced by hypodermic injection, as the stomach is not retentive. Ergota and atropia are recommended, together with ice bags to the spine, the free imbibition of water, and saline injections. In addition to the above, there is still a further difference pointed out between the two diseases. In cholera morbus the "algidity" comes on after the evacuation, and is evidently directly dependent upon the loss of liquid, whereas, in Asiatic cholera the algide symptoms may come on from the very commencement of the attack, and the patient may die in the stage of collapse before their occurrence. "The British disease," he says, "first exhibits its symptoms at the periphery, and develops, as it were, towards the centre; the Asiatic, commencing at the centre, develops its symptoms outwards."

Dr. EDWARDS CRISP contributes a long paper *On the Influence of a Moist Atmosphere in the Production of Pulmonary Consumption*, which is evidently the result of much careful research. It is scarcely necessary to say that his conclusion is that a moist atmosphere has a most powerful influence in the causation of phthisis. He finds, moreover, that there is no such powerful antagonism between malaria and the causes of phthisis as many have supposed to exist. Appended to this paper are the opinions, on these points, of many medical men living in different parts of Great Britain.

The *Movements of the Iris* constitutes the subject of a long essay by Dr. C. ECKHARD, Professor of Physiology in the University of Giessen. As it consists of a critical *résumé* of the views held on this subject which are familiar to our readers, and as Dr. Eckhard himself does not seem to us to come to any settled conclusion on most of the points which are still involved in dispute, we shall not attempt to make an abstract of it.

The President, Dr. RICHARDSON, contributes some remarks on the *Effects of Seasonal Changes on the Animal Body*. Some years ago a Mr. Milner, of Wakefield, performed a series of experiments with a view of determining the periodical fluctuations in weight, substance, and form, which the whole body undergoes. He weighed every prisoner upon his entrance into the convict establishment at Wakefield, and subsequently at the end of every calendar month, all of them, of course, being subjected to similar conditions of temperature, food, exercise, and ventilation. The number of men weighed exceeded 4000, and the total number of individual weighings was 44,004. From his experiments we learn that there was a progressive loss of weight in January, February, and March, and a gain in April, May, June, July, and August, and a loss in September, October, November, and December; or, in other words, an increase of weight during the hot months, and a diminution during the cold. These results are in accordance with physiological truth, for Dr. Ed. Smith has shown that the quantity of carbonic acid exhaled in winter is largely in excess of that given out in summer, and the sudden gain in weight in April is found to correspond with an equally abrupt diminution in the quantity of carbonic acid expired. In conclusion, he says, we should naturally expect that diseases of the lungs would be most frequent at seasons when they are most active, and such, as is well known, is the case.

Another contribution by the same author is *On the Uses of Nitrogen in Atmospheric Air*. Dr. Richardson says, that the reason that pure oxygen is incapable of sustaining life is different according to the temperature of that oxygen. Thus, at temperatures below 50° Fahr. oxygen cannot enter into combination, but if brought into active motion by heat it will destroy ulti-

mately, by just the opposite process, *i. e.*, by setting up too active a combustion. It would be impossible to live surrounded by an atmosphere of oxygen in a climate subject to the variations of temperature common in this country or England. He therefore finds in nitrogen something more than a mere diluent of oxygen, for, says he, "It is the grand equalizer of heat. Thus, when the day is cold the loss of heat from the atmosphere is sustained as four to one by the negative nitrogen; and thus when the day is hot the increase of heat in the atmosphere is sustained as four to one by the negative nitrogen. Thus the oxygen, although it undergoes physical change under great variation of heat and cold, and although it is actually more condensed at the poles than the equator, is never so much disturbed but that it can sustain a certain degree of life."

Dr. Sedgwick exhibited to the Association *An Adaptation of the Reflecting Mirror to the Uterine Speculum.* The adaptation consists simply in attaching to the vaginal speculum an ordinary reflecting laryngoscopic mirror by means of an arm with a ball-and-socket joint. When the mirror is used, it is unnecessary to alter the position of the patient, for, no matter what the source of light may be, the mirror can be adapted so as to reflect on the cervix uteri, and a better illumination may thus be obtained either by day- or candle-light, and the danger of spilling grease on the patient's clothes is obviated, while both hands of the operator are left free. A plate representing the speculum with the adaptation is appended.

The last paper in the volume is *On the Best Means of Lessening Crime*, and is by Dr. George Cordwent. No means can be effectual, the author thinks, which do not include the better education of the young and the improvement of the condition of the poor. J. H. H.

Art. XXV.—*Transactions of the Obstetrical Society of London.*—Vol. X. For the year 1868. 8vo., pp. xlviii. 319. London, 1869.

At the January meeting of the Obstetrical Society of London, three papers were read. The first on *Funis Presentations*, by H. G. Trend, late Resident Accoucheur to St. Thomas's Hospital. In a mixed London practice, where about 250 cases had been annually attended, Mr. T. met with twelve cases of funis presentation during the preceding five years, six of which came under his notice during 1867. In funis presentations, all our efforts are to be directed towards saving the child. In most cases, excluding those where the cord has ceased to pulsate, the question to be solved is, how to deliver in the quickest manner, with the least injury to the mother. In some cases restitution of the cord may be successfully accomplished, though Dr. T. has never met with such a one. In funis cases, complicated with transposition of fœtus, the case can only be treated by turning. "I would turn," says Dr. T., "where the head had not descended into the true pelvis, or had come down but a little way." He would prefer an average pelvis as to size, with a perineum capacious and yielding. There is very little danger of rupturing the latter in turning.

The cases requiring the use of the forceps are those where the head has entered the true pelvis. With a well-dilated perineum, delivery with the forceps is rapidly effected without injury to the soft parts of the mother; even where there was considerable rigidity Dr. T. has been able to use them with tolerable facility. In these cases there is seldom time for long consideration. As far as regards the safety of the child, in such cases, we must act promptly or all interference will be useless. Dr. T. found, in many cases, cough to have been the exciting cause of the complication.

In the second paper, by Henry W. Bailey, is related a *Case of Transposition of the greater part of the Abdominal Viscera into the left cavity of the Thorax*, by which the heart was pushed to the right side of the chest. The child survived its birth, in a feeble, half asphyxiated condition, some few hours.

In the third paper, by Jos. THOMPSON, Jr., is described a *Case of Congenital Umbilical Hernia*, which is interesting, not only from the fact of the existence of the hernia at the time of birth, but also from its great size, and the large quantity of intestine found within it. Two days after the birth of the child, the hernial tumour burst, and two days subsequently to this the infant died.

The delivery of the *Annual Address of the President*, Dr J. H. DAVIS, closed the proceedings of the first meeting. The subjects of the address relate exclusively to the Society—its organization, objects, and its rapid progress as an efficient means, through its Transactions, and their publication, "in collecting from an extensive field of observation, and diffusing it far and wide over the profession, practical experience of great value." The address in its close presents a short notice of those of the Fellows of the Society who died during the year 1867.

At the February meeting, Mr. SPENCER WELLS exhibited a *multilocular cyst of the left ovary*, removed by him on the day of the meeting. He had removed the right ovary from the same patient more than six years before, when she was 50 years of age. The patient appeared likely to do well.

Dr. BRUNTON exhibited a *placenta* showing fibrinous deposits.

Dr. WILTSHIRE exhibited a *utero-vaginal douche*, which, by an adaptation of Dr. Richardson's India-rubber balls, furnishes a steady continuous stream.

A paper was read by Dr. W. S. PLAYFAIR, *On Cardiac Apnœa after Delivery*. The question discussed in this paper, basing the suggestion upon the fact that certain anomalous cases occasionally occurring after delivery, characterized by all the phenomena usually ascribed to embolism, but in which the patient eventually completely recovers, is whether in such cases there is not actually formed a coagulum in the right side of the heart and pulmonary arteries, and which, in some manner not yet well understood, is sooner or later got rid of? After a very full and thorough investigation of this question Dr. P., feels inclined to answer it in the affirmative. To admit of the animal functions being carried on, Dr. P. thinks it is probably essential that the coagulum formed should be very small, so as not to prevent a certain amount of blood reaching the lungs.

The paper gave rise to a very animated discussion among the Fellows present, the greater number of whom would seem to acquiesce in the probable correctness of the views advocated by Dr. P.

Dr. W. TYLER SMITH relates two cases of *Inversion of the Uterus after Delivery*, in both of which replacement was promptly and readily effected, the patients escaping all after inconvenience.

"The point upon which all authors and observers agreed," Dr. S. remarks, "is, that the attempt to reduce the inversion should be made as quickly as possible. Hours or even minutes of delay greatly increase the difficulty of reduction. It is also evident that we have in chloroform and, probably, in other anæsthetics, the means of making the reduction comparatively easy, by removing the spasm of the os and cervix. I would almost venture to go so far as to assert that, with chloroform, no case of inversion would be incurable if treated within a reasonable period after labour."

The history of a somewhat unique case of *Inversion of the Uterus*, in which spontaneous reduction promptly took place, was reported as having occurred in the practice of HENRY S. SHAW.

In the next paper is given an account of a *Case of Monstrosity* which occurred in the practice of THOMAS LANGSTON. There was an entire absence of the cranial vault. The vertebral column could not be traced, a thin membrane covering the upper portion of the spinal cord.

At the March meeting the *new pelvimeter* of Prof. BYFORD, of Chicago, was exhibited.

Two specimens were presented of *ovarian cysts*, which Dr. TURNER had removed from a patient eight days previously, and who, up to that time, was doing well. The patient was nineteen years old, and, although both ovaries were converted into two dropsical sacs, and exhibited no trace of any remaining proper ovarian structure, menstruation had continued to occur regularly and rather profusely, from the age of fourteen when it began, up to the

time of the operation, the last period having ceased about a week before. A discussion ensued, in which Drs. Barnes, Hewett, Tyler Smith, Snow, Beck, and Murray, and Mr. Chambers took part. It was generally considered by them that either a portion of one ovary still remained in a healthy state, or that the cysts removed in this case were in fact cysts of the broad ligament unconnected with the ovaries.

A pair of *midwifery forceps* was exhibited by Dr. AVELING, in which the handles curved backwards. By this modification a better grasp in making traction is obtained. The handles, also, are more out of the way of the operator in introducing and locking the blades, and are not interfered with by the patient's legs when the head is passing over the perineum.

A *Case of Rupture of the Uterus* during labour, with death of both child and mother, was related by E. J. ASBURY, Esq., which presents no points of special interest. Mr. A. believes that the rupture described by him was due to over-distension of the uterine and abdominal walls, rendering them thus permanently thinned. Possibly degeneration of the muscular fibre had taken place. The uterus acted convulsively and without uniform assistance from the requisite muscles, and during one of these efforts gave way. Our own experience has led us to believe that a softening of the uterine tissues is by no means an unfrequent predisposing cause of their rupture during labour.

Dr. J. B. HICKS related a *Case of Cæsarian Section*, performed on a subject with contracted and deformed pelvis, at a period of her pregnancy about a fortnight before full term. The incision through the walls of the abdomen extended from the umbilicus nearly to the pubis. The child's breech was immediately under the line of incision, which facilitated its removal. After the removal of the placenta the uterus contracted, without the occurrence of hemorrhage. It was grasped to secure its perfect contraction, and the external wound was ultimately closed by silver sutures. About forty-eight hours after the operation, tympanitis set in and continued to the last a most distressing symptom. The deformed spine adding much to the patient's discomfort. The pulse, from the date of operation, was quick, gradually rising to 150 per minute. About the seventy-second hour, symptoms of exhaustion were manifest, and at the end of four days death occurred. The child, after some little trouble, breathed, and shortly became, apparently, a vigorous infant. It lived about a month, when it died of thrush.

A *History of the Florence Nightingale Lying-in Ward, King's College Hospital*, by CHARLES C. ROWLING, late Resident Accoucheur to King's College Hospital, was communicated by Dr. W. S. PLAYFAIR. After the Crimean war, a large sum of money was raised by the friends and admirers of Miss Nightingale, with the intention of presenting it to her. She would not receive it for herself; but requested that it should be applied to the instruction of women in nursing. Arrangements were, in consequence, made with the authorities of King's College Hospital, to have set aside a large ward in the hospital where young women could be instructed in midwifery. The ward was situated at the top of the hospital, and had two small wards opening out of it. Two other wards were on the same floor, separated from it by a long gallery that communicated with the staircase, running round a large shaft from the bottom to the top of the hospital. Directly below the lying-in ward was a medical ward, and below that again a surgical ward, besides two other medical and three surgical wards, all communicating with the shaft around which the staircase wound.

Careful statistics show that the average maternal mortality which has occurred in the lying-in ward just described, since its opening, Jan. 1862, six years, has been 1 in 28.9 labours. In the lying-in hospitals of Paris, St. Petersburgh, London, Vienna, Glasgow, Liverpool, and Dublin, the statistics of 90,000 cases gives an average mortality of 1 in 29.3 labours. At the Rotunda Hospital, Dublin, the average for six years, 1861 to 1866, was 1 in 34.9. At the British Lying-in Hospital, for the last six years, it was 1 in 54.8. "So that the mortality in the Nightingale Ward has been higher than the average of the large number of cases collected by Mr. R.—much higher than of many of the places taken individually. An interesting question arises. What is the cause of this high rate of mortality? The general arrangements to secure

thorough hygienic conditions were as nearly perfect as could be; then why should there be so many deaths? Mr. R. has no hesitation in saying that the reason is, what Dr. Farre originally objected to, "the collection under one roof of medical and surgical cases, especially the latter, with midwifery cases. Without the utmost precaution this could not but be attended with the most dire results. As it was, the transmission, from the other wards to the Nightingale ward, of the poisoned air of all the wards below it, was wonderfully facilitated by the construction of the hospital. That such was the case is shown by the fact that, on more than one occasion the women occupying the beds nearest the door were sufferers from a high temperature of surface, while the other inmates of the ward were all doing well. He has no doubt that the occasional outbreaks of erysipelas and pyæmia which occurred in the surgical wards was the signal for the occurrence of puerperal fever in the Nightingale Ward." Within the last six months, says Mr. R., it is certain that the only outbreak of puerperal fever in the ward was at a time when erysipelas and pyæmia and allied unhealthy inflammations were rife in the surgical wards. During this time an interesting fact occurred, showing the connection between erysipelas and puerperal fever. The child of a patient delivered by the forceps, was slightly marked by the instrument behind the left ear. From this erysipelas spread over the head and face, and the child died.

At the April meeting four papers were read; the first by Dr. W. S. PLAYFAIR, giving the history of a *Case of Malignant Disease of the Uterus, complicated with Pregnancy.* Premature labour set in between the fifth and sixth months of utero gestation, and the fœtus was slowly extruded together with secundines in the course of two or three days, in detached portions of an almost pulpy consistence. A solution of carbolic acid was injected from time to time to diminish the excessive fetor of the discharges, and to lessen the risk of septic absorption. It is probable that the repeated hemorrhages which occurred in this case had caused the death of the embryo so long before labour set in as to allow of its being sufficiently decomposed to pass the narrow and rigid aperture of the diseased os.

The 2d paper, by Dr. P. SMITH, described the *Extraction of a Hair-pin from the Bladder of a Female*, by means of an instrument invented by Dr. S. which appears to have been well adapted to accomplish the object for which it was designed.

The 3d paper, by Dr. E. COPEMAN, which is of considerable interest, presents a series of *Cases Exemplifying some of the Difficulties encountered in Determining the Existence of Pregnancy*, and the value of auscultation as a means of diagnosis. On the subject of auscultation Dr. C. writes as follows: "I believe that the placental souffle is one of the most valuable signs of pregnancy, second only to that of the fœtal heart, and the most dependable of all signs when the child is dead. To a practised ear the sound is peculiar and distinctive. It is not the blunt sound or knock, such as the aorta gives if heard through a solid tumour situated over it; neither is it like what is occasionally heard—a kind of humming noise, when the stethoscope is placed over a large vascular ovarian sac; it is a softer sound, something like a guttural pronunciation of the word *woof*, synchronous with the heart's action, such as might be expected to be produced by forcing a fluid *per saltum* through a sponge; and towards the end of pregnancy it is so loud as to be accompanied with a twang or ringing noise."

The next paper which is replete with interest, treats of *Puerperal Fever in the British Lying-in Hospital;* with remarks on the management of the disease, by Dr. GRAILY HEWITT. "The question," Dr. H. remarks, "has often been discussed. What is Puerperal Fever, and what are its causes? In face of the facts which observation will supply any attentive inquirer into the phenomena of this grave disease, it is impossible to escape the conclusion that it consists in nothing more or less than an introduction into the general circulation of a poisonous material of animal origin—that it is a form of pyæmia, for the production of which the minutest portion of the morbific agent may prove sufficient. It is further impossible to escape the conclusion that the point at which the morbid material is introduced, is, unless under

certain very exceptional circumstances, either the inner surface of the uterus or the vaginal canal. The variations in respect to liability to attack appear to be connected with accidental circumstances, such as actual contagion, of which we have an instance when puerperal peritonitis follows the insertion of the finger recently employed in a post-mortem examination, or the existence of an atmosphere around the patient impregnated with effluvia of a poisonous character—instances of the latter being those severe and fatal outbreaks of puerperal fever which occur in crowded lying-in hospitals. That puerperal fever may occur in a well-marked form, and apart from such introduction from without of morbid material is undoubted, but in such cases the explanation is virtually the same—the secretions from the surface of the uterus may become fetid, and in that state be absorbed, in which case we have the idiopathic disease. The variations in respect to the effects which follow the introduction of the poison are numerous, but they are not greater than we should on *à priori* grounds expect. In one case the system vigorously resists the poison, lymph is thrown out, and inflammatory products effused; in another the patient succumbs, and we find little change in the solid tissues, the bulk of the blood itself having been the seat of action of the poison. The uterus is found larger than it should be, and the process of involution has been arrested."

In respect to the treatment, Dr. H., in addition to cleanliness, quietude, pure air, due ventilation, and compression of the abdomen by the application of the usual binder, directs a sustaining diet, tonics, mild stimulants, and depuratives, avoiding bleeding, purging, and all remedies of a debilitating character. His experience in the treatment of puerperal fever both in and out of hospital has given Dr. H. the greatest confidence in the efficacy of the method of which the foregoing is an outline.

This paper gave rise to a very animated debate, most of the speakers concurring in the leading views advanced by Dr. H. in respect to the pathology and therapeutics of puerperal fever.

Dr. Squire remarked that there is a close relationship between hospital gangrene, diphtheria, erysipelas, and puerperal fever, and in diseases of this kind where a septic influence is traceable, the sustaining system of treatment with stimulants throughout, in conjunction with the employment of such remedies as iron and quinia is the right one; this is shown by the fact that all the cases of Dr. H., where it was pursued, recovered. That there was no mistake in the character of these cases, if their history and details as given by the doctor were not enough, his own judgment and experience are sufficient to assure us of the correctness of his diagnosis.

Dr. J. H. Davis considered there should be no doubt whatever that puerperal fever is a highly contagious disease, that it is communicable to a puerperal patient not only through its own contagious emanations, but through those from scarlet fever, measles, typhus and erysipelas. The identity of the disease with erysipelas in some epidemics had been shown by the late Dr. Rigby, by Dr. Gordon of Aberdeen, as well as by others, who had all enjoyed equal opportunities for studying the disease. Dr. Rigby observed in one severe epidemic, that the infant of every patient who had died of puerperal fever perished from erysipelas. Various sources of putrid emanations, viz., putrid lochia, especially of women congregated in hospitals, gases from open sewers, putrid matters from dissections and from hospital sores, had been rife causes of that very fatal disease.

At the meeting in May Dr. Greenhalgh exhibited an *elastic spring pessary* which he had invented for the cure of retroversion of the uterus.

Dr. Williams exhibited a mass of *hydatiform vesicles* attached to a portion of placenta or of blighted ovum, together with hardened masses of blood.

Dr. Rogers exhibited two large fleshy masses forming a single *polypoid tumour* of the uterus, removed by two operations, at an interval of two days. Patient doing well.

Dr. Rasch exhibited a fœtus and placenta of perhaps five months, in which the umbilical cord was completely obliterated near the umbilicus by twisting.

Dr. Marshall showed the photograph of a child born with an amputated arm.

Dr. RASCH exhibited an instrument, he had contrived, to prevent the wetting of the bed while injecting the vagina.

Dr. J. MURRAY described a *pocket chloroform inhaler.*

Dr. H. M. MADGE related a *Case of Ruptured Uterus.* From this history Dr. M. inferred: 1st. That the symptoms of ruptured uterus are not always so well marked as the descriptions in books might lead us to expect. 2d. That in the case described by him the injury was probably partially effected some hours before delivery, and was made more complete by straining efforts at stool. 3d. It is probable, also, that some degree of contraction of the brim of the pelvis was an element contributing to the accident. 4th. That as the labour was not a protracted one the cause of the rupture was inherent weakness, probably degeneration of the uterine tissues, and as this condition could not be known beforehand, the unfortunate result was inevitable.

A paper was read by Dr. W. S. PLAYFAIR on *The Absorption of Fibrous Tumours of the Uterus* Dr. P. thinks it very probable that the cessation of menstruation, and the consequent physiological atrophy of the uterine organs has a powerful influence in inducing absorption of these tumours. It is a very common observation that not only do the formidable symptoms of fibroid uterine tumours disappear after this period, but that the tumours themselves diminish in size, and possibly more extended inquiry may prove their occasional entire disappearance in this way. Another condition which would seem to favour absorption is the natural involution of the uterus after delivery. Accurate observations on the effect of delivery in cases of uterine fibroids would be interesting in reference to this point.

The Uterus and the Vessels concerned in Phlegmasia Dolens, were presented at the June meeting by Dr. R. BARNES. The only reason for this presentation was because the opportunities for seeing a similar pathological specimen rarely occur. The state of the uterus was healthy; there was no evidence of pus in its substance, the broad ligament on the side corresponding to the obstructed veins was free from any morbid action, hence there seemed no reason to conclude that the obstruction in the iliac and femoral veins was due to absorption from the uterus. Dr. B. believes that this case, like most others, would have terminated favourably but for an attack of erysipelas.

Three Cases of Ovariotomy were related by Dr. P. S. MOOTOOSAWMY MOODELLY, a graduate of Madras Medical College, Native Surgeon, Civil Dispensary, Manargudi, Tanjore District. The cases were three in number. In the first the patient had an entire recovery after the operation: in the other two cases, death took place; in one four days, and in the other, fifteen hours after the operation.

Dr. A. E. SANSOM read a paper on *The Pain of Parturition and Anæsthetics in Obstetric Practice.* Dr. S. maintains that experience shows that chloroform properly administered to annul the pain of natural labour, is absolutely free from danger to life. He also insists that the action of chloroform and the other anæsthetics is primarily upon the nerves of sensation and not upon those of motion; and, further, that to relieve the pains of natural labour only, small doses and the early influences of an anæsthetic are necessary, which conditions can be fulfilled without depression, but with rather an exaltation of the forces of the circulation. Chloroform, administered according to definite principles, and in a careful manner, Dr. S. believes to be the best of all anæsthetics in midwifery practice. Concerning it, he believes the following points to be determined: 1. That small doses, and the early stages of its influence are necessary. 2. That administered in this mode, and to this extent, it is innocuous, and even exalts circulating power. 3. Large doses are quite unnecessary for the fulfilment of the conditions of obstetric anæsthesia; and 4. Large doses, and particularly large proportions are dangerous, by producing paralysis of the circulation. Dr. S. thinks that it is incumbent on the practitioner to dilute the chloroform which he exhibits. The dilution may be effected by air by means of a proper instrument. By volatile media, as in Mr. Ellis' plan; by the use of anæsthetic mixtures, which act partly by the dilution with the vapour of the anæsthetic commingled, and partly by retardation of evaporation.

Dr. S. feels himself assured by many experiments on the following points:

1. That the best anæsthetic mixture is one of chloroform and absolute alcohol. 2. That the principal value of the alcohol is to retard too rapid evaporation of the chloroform. 3. That by means of this mixture the regulation of the atmosphere inhaled is effected with sufficient precision for all practical purposes. 4. That the anæsthetic mixture to be recommended in obstetric practice should consist of one part of chloroform to two of absolute alcohol.

At the July meeting, Dr. MEADOWS exhibited a curious specimen of *tumour* which he had removed by the single wire écraseur from the anterior wall of the vagina. The case was somewhat remarkable from the position of the tumour, which led to a difficulty in diagnosis. For several days after the operation all went on well, but at the end of a week the patient became suddenly very ill, with symptoms resembling those due to embolism, and she died the same evening.

D. J. B. HICKS related a *Case of Face Presentation* in which delivery was effected by the cephalotribe.

Dr. J. BRUNTON related a *Case of Presentation of the Right Breast* followed by prolapsus of the cord and right arm; delivery by version. The case is interesting, inasmuch as the presentation is one of rare occurrence. Dr. B. thinks that if the labour had been active, seeing that the child was premature and the mother's pelvis of fair size, nature unaided would have delivered the child. Under the circumstances it was thought best to deliver at once by turning. It is also interesting from the fact that the child was born alive after so lengthened a prolapse of the cord. However, the position of the child will show that there could not have been much pressure on the cord.

The next paper is a long and somewhat elaborate one on *Chorea in Pregnancy*, by Dr. R. BARNES. The subject is treated throughout with great fulness and ability. No one can give it a careful perusal without profiting by its teachings. It would be a pleasure for us to present our readers with a full analysis of it, but from the length and character of the paper we could not do justice to the author or to our readers within the space to which we are necessarily restricted.

At the next meeting (October), Dr. WILLIAMS exhibited a large *ovarian tumour*. The chief interest connected with which consisted in the great difficulty there was of determining, during life, the nature of the case.

Dr. H. SMITH exhibited a five months' fœtus, having to the right of the anus, but not connected with it, a rent large enough to admit a finger, through which protruded the rectum and several loops of intestine. The lesion was evidently due to the progress of decomposition in utero, but whether it occurred from this cause alone, while the fœtus was at rest in utero, or by the pressure exercised by the uterus during labour, it is impossible to say.

Dr. C. J. TILT read a very able paper on *Irritable Uterus*. He regards an irritable uterus as nothing more or less than one affected with a neuralgic condition of its nerves, kept up by the morbid condition of the uterine tissues that has almost always lasted for many years. The treatment of the so-called irritable uterus is therefore, according to Dr. T., the treatment for neuralgia—sedatives, tonics, change of air and circumstances, peace of mind as far as attainable, while, at the same time, strenuous efforts are made to remove any existing uterine mischief, by cooling vaginal injections, by cold and medicated hip-baths, and by the local application of sedatives. Those who depend chiefly upon mechanical means in the treatment of uterine displacements, Dr. T. urges to at least wait until all other means of relieving the patient's sufferings have been fairly tried; for, although it is perfectly true that, in exceptional cases the diseased womb may bear with impunity almost any amount of surgical manipulation, still, in the majority of cases, where the womb is diseased as well as distorted, surgical interference will give rise to more or less disastrous consequences.

Flexions of the Uterus is the subject of the next paper, by Dr. A. MEADOWS, which is one replete with interest and instruction. Dr. M. lays down as the leading fact in the pathological history of uterine flexion, that the conditions by which they are accompanied are the essential characteristics of inflammation, and that this inflammation precedes the displacement, and is the principal if not the sole cause of it. The facts and arguments adduced by Dr. M. are well worth

a careful consideration on the part of every physician. If, now, it be true that flexures of the uterus, are, as a general rule—and there is no rule without exceptions—produced by, and not the producers of enlargement, congestion, and inflammation of the organ; the one practical lesson to be gained from this fact, according to Dr. M., is, that in the treatment of these cases, our first and principal object ought not to be the immediate reduction of the displacement. We ought first to remedy that which is not only the cause of the flexion, but which is at the same time responsible for by far the greater part of the patient's suffering. When this is accomplished, but not till then, we may resort to mechanical or other treatment for the proper reposition of the organ. Dr. M. is not opposed to all local treatment for rectifying uterine flexions. All that he advocates is, that it be made subordinate to that which is of far higher importance. From pursuing an opposite course he has known great mischief to result.

The discussion to which the last two papers, those of Drs. Tilt and Meadows, gave rise, as well at the meeting at which they were read, as at the succeeding meeting to which it was formally postponed, was full of interest and instruction.

At the November meeting, Dr. G. HEWITT exhibited a series of pessaries which he had for some time employed in the treatment of uterine displacements and flexion.

Dr. Meadows exhibited some new forms of *medicated pessaries*, which he believed would be found, as they had certainly been in his hands, much more efficacious than those ordinarily used, made with cocoa-butter. In those of Dr. M. the basis is soft soap, made into a mass with powdered althæa, or starch, or beeswax. They are both cleaner and more effective than those from cocoa-butter.

Mr. HECKFORD presented the anatomical specimen of the following case. A child, 10 months old, was brought to the East London Hospital for Children, having some large villous looking growths from, apparently, the vulva. Opinion was divided as to whether they were syphilitic or cancerous. Further examination showed that those growths extended inwards, lining a large sac, representing an enormously dilated vagina. Death shortly ensued. On examining the body the rectum, bladder, and urethra were found in their normal places. The uterus, all its annexes being healthy, opened by its os into the upper wall of the cyst. The microscope showed the growths to be medullary in character. Their first appearance could not be traced beyond, at most, four months. No history of cancer traceable in the family. The coexistence of malignant disease, with evident malformation of the vagina, is quite unique.

Dr. J. H. DAVIS related a case of *Intra-uterine Fibroid Tumour*, a part of which *was removed* by the single-wire écraseur, while the remainder strongly adherent, after being cut into in different directions, was thrown off on the fourth day by disintegration. Entire recovery of patient followed.

At the December meeting Dr. SANSOM exhibited *pessaries* charged with medications in a liquid form. They consist of a hollow cone of white wax, capable of holding in their interior one drachm of the fluid desired to be applied. The cone is closed at its apex by a plug of cocoa-nut butter. One of these pessaries being introduced as far as it will go, its apex will impinge upon the cervix uteri. This portion of the pessary is soon dissolved, and the contained fluid comes in contact with the parts at the summit of the vagina.

Dr. E. COPEMAN presented a paper on *The Treatment of Imperforate Hymen with retained Menstrual Fluid*. After reference to the fact that an incautious treatment of such cases is liable to be followed by peritoneal inflammation, Dr. C. urges upon the practitioner the necessity, in order to avoid this, to be careful to draw off gradually the retained menses, by a simple puncture, the patient being then left at rest slowly to recover from the effect of retention before other means are taken to enlarge fully the passage into the vagina. The discussion to which the paper of Dr. C. gave rise, is replete with instruction. In the course of it the plan suggested of evacuating at once the retained catamenia was discussed, and by most of the speakers condemned.

Dr. W. MARTYN gave the history of *A Case of Tedious Labour*. Delivery

by the forceps. Death of patient on the third day afterwards, probably from thrombosis of right side of heart and pulmonary arteries.

Dr. D. L. ROBERTS described *Two Cases of Monstrosity*. In the first, a female, apparently in the 7th month of uterine existence, was a foot long, and acephalous. The entire scalp, with the integuments over the spinal column, with the lamina and spinous processes of the cervical and dorsal vertebræ were wanting; the parts being covered only by a membrane, leaving the whole of the calvarium and corresponding part of spinal column entirely open, and unoccupied by cerebral structure. The abdominal parietes were wanting, exposing the liver *in situ*, covered only by peritoneum. Several coils of small intestine were extruded. The second case was that of a male child born at full term. It had a double harelip, with cleft palate on both sides, six fingers on each hand, six toes on each foot, an umbilical cord much distended at its abdominal attachment, apparently hernial in character. The frontal portion of calvarium greatly compressed.

Mr. W. SQUIRE read a most interesting paper on *Infantile Temperature in Health and Disease*. High as is our estimate of the value of this paper, it is one, we regret to say, that will admit of no very satisfactory analysis, at least sufficiently concise to suit our restricted limits. D. F. C.

ART. XXVI.—*Researches on the Intimate Structure of the Brain*. Second Series. By J. LOCKHART CLARKE, F. R. S., etc. From the Philosophical Transactions, Part I., 1868. London: 1868, 4to. pp. 68. Illustrated with seven lithographic plates, containing sixty-five figures.

IN this valuable contribution to our knowledge of the minute anatomy of the brain Mr. Clarke has taken great pains to demonstrate the gradual transitions and morphological changes which are successively encountered in tracing the medulla oblongata upwards into the higher portions of the encephalon. A correct interpretation of the morphological and histological relations of the encephalic ganglia must necessarily depend, in great part, upon an exact knowledge of the intimate structure and relations of the various elements of the medulla. In a pathological as well as a physiological point of view it is impossible to overestimate the importance of such studies.

In a former memoir upon this subject, our author showed that the anterior pyramids of the medulla oblongata are composed of: 1. Decussating fibres of the anterior commissure continuous with that of the spinal cord; 2. Decussating fibres from the opposite lateral columns constituting their chief bulk; 3. Decussating fibres from the posterior gray substance; 4. Non-decussating fibres of the anterior columns, forming a small part of their outer side. He also demonstrated that the decussating fibres from the posterior gray substance emerge from the posterior pyramidal nucleus, the restiform nucleus, and the posterior horn near its extremity. Subsequent observations have not only convinced Mr. Clarke of the truth of these statements, but have also enabled him to make some important additions thereto. He has since ascertained, by means of peculiar longitudinal sections, that some of the decussating fibres of the anterior pyramids, which only appear to cross the antero-lateral gray substance in their course from the opposite lateral column, do actually arise out of that substance, and that the decussating fibres from both the posterior and anterior gray substances ascend towards the brain after they have joined the pyramids. He also indicates the existence of another exceedingly interesting structure consisting of several curved bundles of fibres which, in one of his drawings, are represented as proceeding transversely outward to the lateral column and crossing the fibres of that column which run to the opposite pyramid.

"These fibres," he writes, "take no share in the formation of the pyramids; and after running outward for a short distance they turn round and *descend* the cord obliquely across the longitudinal fibres of the lateral column. At the points

where these two sets of fibres bend round (where the former or transverse set descend, and the lateral or longitudinal set become transverse as they cross to the opposite side) there is a very complicated and curved interlacement of bundles. Now the physiological importance of the former set is evident when we consider that the part of the posterior gray substance from which they arise is precisely that which forms the lower portion of the spinal-accessory and vagal nuclei, and with which the lower roots of the spinal-accessory nerves are connected. It is moreover interesting to observe that in ascending the medulla oblongata above the decussation of the pyramids, a similar system of fibres was found to proceed from the same respiratory centre, and to run down the lateral columns."

Several pages of the memoir before us are occupied with a detailed account of the structure and connections of the respiratory centres. Without constant reference, however, to the illustrative plates which accompany the work, it is utterly impossible to convey to the reader a satisfactory account of the author's descriptions. Suffice it to say that Mr. Clarke points out a most intimate and important connection between the hypoglossal and spinal-accessory nuclei through the medium of their cells. He shows, also, that the spinal-accessory nerve has a separate origin from the hypoglossal nucleus and that both the vagus and glossopharyngeal nerves have each a separate origin from the same source. In birds the distinct origin of the vagus nerve from the hypoglossal nucleus is very striking. In fishes there is no separate hypoglossal nerve, but the tongue is supplied with a branch of the vagus. Mr. Clarke finds that in these animals "the lower division of the vagus nerve, after proceeding transversely through the lateral part of the medulla, bifurcates into two distinct roots of considerable size; and that while one of these curves backward to spread into the gray substance behind the canal, the other bends forward into a round or oval nucleus, which, in regard both to the character of its cells and its position in front and at the side of the canal, corresponds exactly to the hypoglossal nucleus of the higher vertebrata. These appearances are so well marked —this anterior nucleus is so distinct, and its connection with the corresponding root of the vagus nerve is so evident—that in well-made preparations they may be seen with the greatest facility. In fishes the roots of the vagus external to the medulla consist of two sets—the one a little above the other. The lower set are on a level with the calamus scriptorius; the upper set are on a level with the large vagal eminence of gray substance which rests on the floor of the fourth ventricle beneath the cerebellum."

Our author next proceeds to treat of the olivary bodies. He assures us that in fishes he has never been able to discover any structures to which he could point as the representatives of the corpora olivaria of the higher animals. In birds, however, they certainly exist, although their cells are not arranged in the form of a lamina, but are scattered about the column in which they are contained. In the higher mammalia they assume the form of a lamina, which, in the feline tribe especially, is bent into a simple curve or loop. In the cat the olivary body consists of three masses of cells, the one in the middle being a simple loop. In the common ape the olivary bodies are not only much increased in size and more prominent on the surface of the medulla, but the loops or folds of the lamina, which are simple in the highest carnivora, as the cat, are thrown into secondary loops or convolutions. As we ascend the animal scale the convolutions of the lamina become more numerous, and the bulk of the entire organ is much greater, as may be seen in the orang outang. It is a curious fact which may be mentioned in this connection, that while in man the hypoglossal nerves are attached to the inner side of the olivary bodies, and in the mammalia generally to the outer side, in all the apes, even in the orang outang and chimpanzee, their point of attachment is intermediate, that is to say, they are attached to the olivary bodies themselves.

The structures forming the upper part of the fourth ventricle of the human medulla are next described, but with such constant reference to the plates, that without these before the reader it would be impossible to follow satisfactorily the description of the author.

In the floor of the fourth ventricle various nerve-fibres, known as *striæ*

medullares, are seen running in different directions, but chiefly more or less transversely from the median sulcus over the "fasciculus teres," and the auditory nucleus, toward the root of the auditory nerves.

"According to Prochaska and others, these *striæ* are sometimes entirely absent from the human medulla, and when they are present are wholly unconnected with the auditory nerves. On the other hand, Burdach, Bergmann, Heusinger, and Arnold, consider that they are directly connected, either wholly or partially with the auditory nerves. Treviranus thought that the delicacy and variety of the sense of hearing in man are due to these fibres because they are absent in animals. Arnold found that, as a rule, a large portion of these striæ were always in connection with the auditory nerves. According to Serres, the sense of hearing in the child is never very acute until the striæ make their appearance. Longet, Meckel, and Prochaska state that they are sometimes altogether absent. In one deaf and dumb subject examined by Schröder van der Kolk, they were scarcely to be found, while in another they were very fully developed.

"In the large number of medullæ that I have examined, I have always found these striæ present in a greater or less degree; but in every instance they differed to a certain extent both in size and direction. Sometimes they arose out of the *fasciculus teres*; sometimes out of the posterior nucleus of the auditory nerve, on the floor of the ventricle; but more frequently they sprang from the median sulcus, and from the *fasciculus teres* along its edge. Some of them crossed the ventricle transversely, either in straight lines or in curves with their convexities upward, and winding round the restiform body or the inner edge of the *flocculus*, terminated somewhat abruptly, either in the flocculus itself or in the auditory nerve. Commonly one thick bundle, below the auditory nerve, turned round the restiform body to its anterior surface, and running between it and the olive, was continued into the pons. This bundle is pierced by the roots of the glossopharyngeal nerve, and by the upper roots of the vagus in their course inward to the nuclei. Some of the striæ, instead of passing transversely outward towards the auditory nerve, occasionally ran obliquely upward to the inner surface of the middle peduncle; and I have sometimes found them taking an almost longitudinal course along the floor of the ventricle, beneath the superior peduncle, toward the corpora quadrigemina."

Mr. Clarke thinks that many of the striæ medullares connect both the portio mollis and the auditory nucleus with other parts of the medulla and brain.

A layer of columnar epithelium cells covers the whole of the fourth ventricle. These cells are shorter than those around the canal of the spinal cord, but, like them, they give off from their tapering ends a multitude of fine fibres which run in different directions through the subjacent tissue.

The next twenty pages of the memoir before us are devoted to an account of the intimate structure of the auditory and facial nuclei and nerves, the nuclei and roots of the abducens nerve, and the trapezium and superior olivary bodies.

In the third and concluding chapter our author treats of certain physiological and pathological points which his anatomical researches are calculated either to modify or explain.

Before the publication of his memoir on the medulla oblongata in 1858, it was believed by anatomists that the decussating fibres of the anterior pyramids are continuous only with the lateral columns of the opposite side of the spinal cord. Mr. Clarke has shown, however, that they are connected not only with the lateral, but with the anterior columns, and with both the anterior and posterior gray substance. Besides the antero-lateral white columns, the particular parts with which the decussating fibres of the anterior pyramids are connected, are the antero-lateral gray substance; the anterior border of the caput cornu, or expanded extremity of the posterior horn; the base of the cervix cornu on each side of the central canal; the continuation of this part of the cervix cornu in the posterior column, forming its gray nucleus, and subsequently contributing to form a large portion of the outer nucleus of the auditory nerve; and the side of the spinal-accessory and hypoglossal nuclei. These facts have been confirmed by Vulpian, as announced in his recent, valuable work entitled *Leçons sur la Physiologie Générale et Comparée du Système nerveux*. This eminent French physiologist concludes from the above-mentioned facts that it

is not improbable that the anterior pyramids are to a certain degree sensitive and excito-motor. Mr. Clarke, however, thinks that their connections with the sensory portions of the medulla oblongata and cord do not afford sufficient ground for the conclusion that they are sensitive; although it is presumable that, by virtue of these connections, they are excito-motor, probably through the gray substance within the pyramids themselves, the pons Varolii, or both.

"Now some of the connections which I have pointed out between the fibres of the anterior pyramids and certain other parts of the medulla oblongata, are exceedingly interesting in a physiological point of view. I have shown, both now and on former occasions, that the spinal-accessory nerve may be traced to several different centres of origin. Its upper rootlets arise from a special nucleus or column of cells, which descends behind the canal to about the level of the lower end of the olivary body; while its lower rootlets arise from the *lateral gray substance*, and from the *anterior gray* substance which gives origin to the *lower* roots of the *hypoglossal* nerve and to the anterior roots of the *spinal* nerves in the cervical region. According to Bendz and Claude Bernard, the *upper* roots—which I have shown to arise from the special nucleus behind the central canal—go to form the *internal* branch which joins the vagus and is distributed through it to the larynx, pharynx, and palate; while the *lower* rootlets —which we have seen to arise from the antero-lateral gray substance of the cord and of the lower part of the medulla—are collected into the *external* branch, which supplies the trapezius and sternomastoid muscles employed in voluntary and forced efforts of respiration. Now it is particularly interesting to find, as I first showed in 1858, that decussating fibres of the anterior pyramid in their course downward from the cerebrum, turn obliquely backward to the point about which the *special nucleus* and *upper roots cease to arise*, . . . and the *lower roots begin*. There appears, then, to be scarcely a doubt that *these* particular decussating bundles of the anterior pyramids are the channels through which the will influences the movements of respiration. It is very probable also that they are functionally related, in the same way, to the hypoglossal nuclei, or at least, that they are *one* of the channels through which the will acts on the hypoglossal nerves."

Our author's remarks on the functions of the olivary bodies constitute not the least interesting and instructive portion of his memoir.

Willis regarded these bodies as the central organs of articulate speech. This opinion has since been accepted by Dugès and Solly. Burdach and Retzius held them to be subservient to both speech and expression. Serres, guided by pathological considerations, concluded that the olivary bodies influence the movements of the heart. Jerking and irregular action of the heart he attributed to isolated and chronic alterations of these bodies. He also found that stammering was associated with structural alterations of the upper parts of the corpora olivaria close to the pons. In 1858, in his memoir on the medulla oblongata, Mr. Clarke concluded, on anatomical grounds, that these bodies are probably the co-ordinating centres of the different nuclei of the medulla oblongata; that is, that they are the motor and associating agents by which the different complex movements dependent on the medulla are carried on. Schröder van der Kolk concluded both from anatomy and pathology, that the olivary bodies are subservient chiefly to articulate speech and deglutition. He collected from different sources, and recorded, several cases of loss of speech, in which these bodies were more or less altered in structure. Mr. Clarke describes two very interesting cases of the same kind, which our limits will not permit us to reproduce here in detail. In one of these cases the right corpus olivare was not only greatly atrophied, but the greater number of its nerve-cells were wasted to granular points or small granular masses tinted brown or yellow with pigment. Between the olivary bodies the central part of the medulla was softened, so that its lateral halves readily separated along the median raphé. In the other case a rust-colored spot, about the size of an ordinary pin's head, was found in the substance of the posterior convolutions of the olivary body, which proved, upon microscopic examination, to be the remains of an old clot.

"Valuable as these cases are in many respects, they by no means prove that

the loss of articulate speech was due to the lesions in the olivary bodies; since it is impossible to say how far it might have been dependent on the numerous and extensive alterations which were found in other parts of the brain, particularly about the nuclei of the vagal and hypoglossal nuclei. The same objection may be made to Schröder van der Kolk's cases, when they are adduced as proofs that the olivary bodies are the central organs of articulate speech

"Neither are the anatomical points which Schröder van der Kolk brings forward in support of this opinion exactly as he states them to be. According to his theory, the olivary bodies effect the *bilateral* movement of the tongue by their action on the hypoglossal nuclei, because the actions of these nuclei are *unilateral*; 'for the greater part of each nucleus,' he says, 'seems to be isolated in its action, and not to be connected with that of the other side." Now it is not true that the hypoglossal nuclei are scarcely connected with each other; for, as may be seen, especially in longitudinal and horizontal sections along the fourth ventricle, at different depths of the nuclei, there is a very evident decussation of fine fibres; and at the upper end of the nucleus, the commissural fibres between the anterior groups of cells are particularly striking. Vulpian speaks almost in derision of Schröder van der Kolk's theory of the action of the olivary bundles; but, nevertheless, there are not wanting anatomical facts in favour of the opinion that these bodies are subservient to articulate speech. In this process, the tongue, the lips, the jaws and the expiratory muscles are simultaneously combined in action. Now I have already shown that the connection of the olivary bodies with the hypoglossal nuclei is very striking. I have also shown that a column of cells connected with longitudinal fibres and continuous with the fasciculus teres, whence the facial nerve takes its origin, descends low down into the medulla and lies at the back of the hypoglossal nucleus. Moreover, a band of fibres descending from the loop of the facial nerve passes downwards beneath the hypoglossal nucleus. The close commissural connection between the hypoglossal nucleus and the vagal nucleus has been already pointed out. And lastly, we have seen that the lower end of the column of cells constituting the nucleus of the motor root of the trigeminus is imbedded in the columns which ascend from the olivary body. But whether the olivary bodies really act through the channels just mentioned, and thus coordinate the movements of articulation, is not proved by the anatomical facts alone. On the other hand, amongst birds, in which scarcely any traces of olivary bodies are to be found, the Parrot-tribe have the power of distinctly articulating particular words; while in the porpoise, which emits only a kind of moaning sound, the olivary bodies are enormously developed. Experiment throws no light whatever on this subject, so that our only hope is in some fortunate cases of disease, in which the power of speech is perfect, while the olivary bodies are considerably altered in structure; or in which the olivary bodies, *only*, are damaged, while the power of speech is lost. Either of such cases, determined with accuracy, would set the question at rest. M. Vulpian has recently recorded a case which seems to be opposed to the opinion that the olivary bodies are concerned in speech, since these bodies were altered in structure while speech remained perfect to the last. The examination, however, does not appear to have been sufficiently precise to justify a positive conclusion. I give his own words: 'Les olives du bulbe, surtout la gauche, offraient une sclérose bien manifeste, quoique peu profonde, de leur tiers moyen, et cependant—ce qui n'est pas sans importance, au point de vue d'une des hypothèses relatives aux fonctions de ces parties—la parole est restée parfaitement nette jusqu'à la fin de la vie.'

"Deglutition is another process to which the olivary bodies have been regarded as subservient. If they have any share in this process, it is probably only in the first or voluntary stage, in which the food is pressed through the anterior palatine arch by the co-operation of the buccinator, the mylohyoid, the intrinsic muscles of the tongue, and the styloglossi. The second stage, which is purely reflex and involuntary, is probably effected solely through the intimate and important connections which I have pointed out between the nuclei of the trigeminus, the hypoglossus, the glossopharyngeal, the spinal-accessory, the vagus, and the facial. The third stage is reflex simply through the vagus and spinal-accessory. Cases are on record in which the tongue, while entirely re-

moved from all voluntary influence, co-operates, nevertheless, perfectly with the muscles of the fauces and pharynx in the second reflex stage of deglutition. The demonstration which I have given in this memoir, of the close anatomical connection, in different ways, between the nuclei of the hypoglossal, vagus, spinal-accessory, facial and trigeminal nerves throws an important light on the manner in which the complex and associate muscular actions concerned in deglutition, vocalization, and articulation may be effected; and explains, in an interesting way, certain forms of partial or complete paralysis to which the muscles employed in these acts are subject. Dr. Hughlings Jackson was kind enough to show me one of his patients in whom there was complete paralysis and wasting of the right side of the tongue, with paralysis of the same side of the palate and vocal cords, as shown by the laryngoscope. The man had great difficulty of swallowing, and soreness of throat. He was unable to cough, or rather he could not shut the larynx in coughing. He was weak on both sides, but especially on the right. The right shoulder was much lower than the left, and he was unable to shrug it up as he could the other. He could not *whistle* so well as formerly; but he could *articulate in a whisper very well.* Here we have paralysis of the spinal-accessory nerve on one side, supplying the vocal cords and palate: total paralysis of one hypoglossal nerve, and apparently partial paralysis of the facial supplying the orbicularis oris."

"Whether or not the olivary bodies be subservient to the operations of speech and deglutition, it is quite certain that these are not their only functions. We have seen that in all the mammalia, except the mute porpoise, they are very much smaller than in the monkey, which is wholly unable to articulate, and in which the act of deglutition has nothing peculiar. But even if it should be imagined by some that the 'chattering' of the monkey is a kind of speech, the orang outang and chimpanzee are not more gifted in this respect than the inferior tribes, and yet their olivary bodies are much more highly developed, as I have already shown. Now, except their superior intelligence, the only endowments that distinguish the ape-tribe from all other mammalia, are their singular faculty of imitation and gesticulation, and their power of expressing a variety of emotions, of which they are very susceptible; and in these respects the orang outang is by far the most highly endowed. Le Comte, in his *History of China*, says of one of these animals which he saw in the Straits of Molucca, that its actions so strongly resembled those of man, and its passions were so expressive and lively, that a dumb person could scarcely make himself better understood. It signified its joy and anger by stamping with its foot on the ground; it could dance, and would sometimes cry like a child. These animals are also distinguished for their surprising agility and muscular power. Now since the olivary bodies are larger in the ape-tribe than in any other animals, and largest of all in the orang outang, which is the most highly endowed with the power of expressing its emotions and desires, it appears to be extremely probable that this power is dependent on the co-ordinating functions of the olivary bodies. Nor are these functions limited to the medulla oblongata and the parts supplied by its nerves. They extend to the spinal cord and to the sympathetic, influencing the glandular secretions and the diameter of the capillary vessels, through the vaso-motor nerves.

"Anatomists and physiologists are too much in the habit of regarding the olivary bodies as if they were connected only with the medulla oblongata and some other parts of the brain. On this and on other occasions I have pointed out the way in which the different parts of the gray and white substances of the spinal cord are disposed or modified in the medulla oblongata. I have shown that from the outer (posterior) part of the cervix or neck of the posterior horn are developed the post-pyramidal and restiform nuclei which, higher up, form the nuclei of the auditory nerve, while the caput cornu, or dilated extremity of the posterior horn, is thrown aside to be traversed by the vagus and glossopharyngeal nerves, and ultimately to become the principal nucleus of the large root of the trigeminus; that from the *base* of the cervix-cornu, *behind* the central canal, is developed the *special* nucleus for the spinal-accessory, vagus and glossopharyngeal nerves; that the *base* of the *anterior* gray substance *in front* and at the side of the central canal is developed into, or at least replaced by,

the *special* nucleus giving origin to the *upper* roots of the hypoglossal nerve; that the *lateral* parts of the gray substance between the extremities of the anterior and posterior horns, including what I have named the *tractus intermedio-lateralis*, is especially connected with the *lower* roots of the spinal-accessory nerve; and that, in ascending from the cord to the medulla, the remaining part of the anterior gray substance, which lies against the inner side of the anterior column, or the so-called non-decussating portion of the pyramid, and from which the *lowest* set of hypoglossal roots arise—gives place to the groups of cells forming the lower end of the olivary body, which, as it swells out, becomes connected with the anterior part of the antero-lateral column. We have only to make a longitudinal section obliquely inward and backward through this column and the olivary body to see the connection between them. We must therefore regard the olivary body as a large motor nucleus, which is directly continuous by its white and gray substances, with the *anterior* white and gray substance of the spinal cord. The only other purely motor centre of the medulla oblongata, is the hypoglossal nucleus, which is developed from the *base* of the anterior gray substance. It is located apart from the olivary body, and is in the closest connection with the vagus, spinal-accessory, and glossopharyngeal nuclei with which it is destined to co-operate in reflex actions. Although distant from the olivary body it is, however, connected with it by a remarkable band of fibres.

"It is probable that the olivary bodies are not only the centres through which different movements are co-ordinated for expressing the passions and emotions, but that they are the motor centres through which different movements are effected by sudden, violent, or peculiar impressions on the special senses; for they are intimately connected with all the sensory ganglia of the medulla—with the gray tubercle (trigeminus), the vagus nucleus, the post-pyramidal and restiform nuclei (auditory ganglia); the corpora quadrigemina (optic ganglia) through the fillet, and not improbably with the parts about the root of the olfactory bulbs, since I have traced the olivary columns nearly to the anterior perforated space."

The memoir concludes with some remarks upon paralysis of the facial and abducens nerves, followed by a paragraph in which the author strongly urges upon both the physiologist and pathologist the importance of combining anatomy, experiment, and patnology in physiological investigations, instead of following too exclusively any one of these lines of inquiry. J. A. M.

ART. XXVII.—*Anatomie et Physiologie du Poumon, consideré comme Organe de Secretion.* Par le Docteur FORT, Ancien Interne des Hôpitaux, Professeur Libre d'Anatomie et de Physiologie à l'Ecole Pratique, etc. 8vo. pp. 102. Paris: A. Delahaye, 1867.

The Anatomy and Physiology of the Lung, considered as an Organ of Secretion. By Dr. FORT, late Interne of the Hospitals, Free Professor of Anatomy and Physiology at the Practical School, etc.

WE are informed in the preface, that for a long time (so far back as Malpighi, 1661), the lung has been compared by anatomists to a racemose gland; and that, therefore, the author makes no pretension to bringing forward a new work, or new discovery, but simply presents his reflections upon the subject, and by the way, some new ideas of a physiological and pathological nature, suggested by these reflections, since no one else has made a complete study of this analogy—of this *identity* of structure and function between the respiratory apparatus, and an apparatus of secretion.

As to *ancient* writers—previous to the discovery of the pulmonary lobules by Malpighi, in 1661, anatomists considered the lung as a fleshy mass, in which the air and blood commingled. Bartholin about 1661, Willis in 1675, and Helvetius in 1718, confirmed the results of Malpighi; Helvetius demonstrating the independence of the lobules, which previous observers, excepting Haller, had considered as communicating with each other. Willis stated distinctly that the

lobules of the lung are suspended on the final bronchial ramifications, as the fruit of the bunch of grapes on their peduncles. Sœmmering and Presseissen nowhere compare the lung to a gland.

Of *modern* writers, Magendie (1821), Duvernoy (1839), Bazin (1836), make no allusion to it. Ch. Lereboullet (1838), Addison (1842), Rainey (1845), Moleschott (1845), Rossignol (1847), Kölliker (1856); Mandl (1857), Lefort (1858), Milne-Edwards (1858), Sappey (1864), Robin (1860–66), all alluded to a certain analogy to a racemose gland, yet Mandl alone speaks of this analogy at length, and considers the function of the lung as excretory, neglecting, however, almost completely the physiological side of the question. Whence the author concludes that he is right in believing that the ideas held upon the subject of the lung as an organ of secretion were but vague. Longet and Béclard make allusion to the excretion of water by the lung, as also Robin, at greater length, in an article on respiration.

The author is convinced, therefore, that if his ideas are correct, he has placed the subject on a new basis, whence observers can investigate a set of phenomena and morbid lesions, either entirely or imperfectly understood.

The pamphlet includes three chapters, or propositions; in Chapter I. the lung is shown to be a gland in its *anatomy*—previous to which, however, in Art. First, are some general considerations on the structure of glands. They are shown to be organs of disassimilation, since annexed to the organs of circulation, they are charged with the elimination of matters which cannot subserve nutrition. Some of these matters are gaseous and volatile, and these are separated by the pulmonary gland (the lung), or the little lungs of the skin (the sudoriparous glands). The excreting portion of the glands are the ducts, collecting the products secreted by the active secreting portion, which is formed in its simplest expression by many cul-de-sacs. These are made up throughout the glandular system of an expanded membrane, invested within by a layer of epithelium, and without by a vascular network. Glands are collected into racemose, tubular, vascular or follicular, and serous. Among the former are placed properly the lungs, but singularly, also, the liver, with us usually placed among the tubular glands. The kidney, as with us, takes position among the tubular. The spleen, thymus, and lymphatics represent the vascular or follicular, while the category of serous membranes makes up the serous glands. The spaces or cavities in connective tissue are not considered glandular, being unlimited by membrane, without epithelium, and devoid of liquid in any quantity. The uniformity of arrangement of the structure of glands, epithelium within, vessels without, and membrane between, is shown by description and illustration from each of the four groups. Analogy of function also follows analogy of structure. Each gland possessing a property the explanation of which is not understood, that of selecting from the blood those materials suitable to it.

In Art. Second, the lung is shown to be a racemose gland, and possessed of a function like that of a gland, 1*st*, *by the analogy between the respiratory passages and the excretory passages of glands*, although there are also great differences—more apparent, however, than real—which have caused us to lose sight of the identity of structure of the two apparatuses. These differences are necessitated by the additional respiratory function of the lung, and that of the production of voice. The rigidity of the walls of the respiratory passages does not continue to the inmost recesses of the lungs. 2*d*, *by the analogy between the secreting portion of the lung and that of a racemose gland*, since each acinus, so to speak, of the lung structure is also composed of three layers, an epithelial, a structureless membrana propria, and a vascular layer. Here, also, two differences exist, also explicable on account of the additional function. 1st, the proper wall of the air-vesicle, or acinus of the lung is elastic, to permit the enlargement of the organ during inspiration, and its retraction during expiration. 2d, the relation of the three layers is different, the order being in the lung, epithelium within, vascular network between, and membrane without, instead of membrane between. This is intended the better to permit the exit of the gaseous secretion of the lung, evidently taking place with greater facility from the capillaries through the simple epithelial layer, than through the double layer of elastic tissue and of epithelium. We have, also, corresponding differences

between the secreting and excreting portions of the lung and racemose glands. In the lungs, the epithelium of the *secreting* canals and the acinus is pavement, and that of the *excreting* canals cylindrical and ciliated; so, also, in the other racemose glands, the epithelium of the secreting portion and excreting portion is different. In the racemose glands and in the lungs, the *secreting* tubes and acini have a proper wall, forming a single layer, while the *excreting* canals are formed of many layers. In the lung, also, the vessels distributed to the secreting tubes and acini are different from those distributed to the excretory tubes, explaining the difference between the diseases of the bronchi and those of the proper pulmonary tissue.

Further analogy is seen in the facts that, 1st, the acini in each instance are separated by a cellular framework, more or less dense; 2d, that the acini in their grouping, form little masses; 3d, that the acini and secretory conduits are in each instance disposed at the extremities of the excretory conduits in the same manner that the fruit of the bunch of grapes by their peduncle are disposed at the extremities of the ramifications of the raceme; 4th, that the general arrangement of each apparatus is similar; and, 5th, that both are surrounded by a cellular (areolar) layer, which is double, the lungs being further covered by a serous layer indispensable to the movements of these organs on the thoracic walls. Finally, in the excretory ducts of both, there exists an internal epithelium, fibres of connective and elastic tissue, and muscular fibres; while the submucous glands found in the excretory ducts of the lung, pouring out a mucous liquid on the surface of the duct are also occasionally met in the ducts of racemose glands.

In Art. Third are a "few words on the structure of the lung." The discrepancies here, as elsewhere, are in part very properly attributed to different methods of preparation; some observers examining the air-vessels when injected, while others have studied them empty. Yet even these discrepancies are more apparent than real, and are confined to a single point, the disposition of the partitions and compartments of the interior of the lobule; the followers of Malpighi, as stated, contended that the *compartments of the lobule* communicate *with each other, or rather with the common vestibular cavity of the lobule.* Among these are Helvetius, Sœmmering, Magendie, Rainey, Rossignol, Todd and Bowman, Kölliker, Mandl, Milne-Edwards, Sappey, Robin, while Presseissen, Meckel, Bazen, Duverney, and Lereboullet contended for the independence of each cellule or compartment formed at the extremity of the respiratory canal.[1] The views of the structure of the lobule as held by various authors are clearly illustrated by figures appropriately intercalated.

In Art. Fourth, the lung is also shown to be a gland by its *development.* The trachea, like the excretory duct of glands, at first a simple band, hollows itself out, and by budding, divides, forming the bronchi. These, at first also solid, become hollow, and bud in turn, these buddings multiplying themselves until the lung is made up of a large number of cavities, further divided by partitions into the little compartments.

Chapter II. takes up the subject in a *functional* point of view, and has for its object to prove that the lung presents a secretion analogous to that of other glands. The matters removed by the lung being recrementitial, are strictly excretions. This function of the lungs has been overlooked, because we have long been in the habit of confounding all the actions of these organs under the name respiration, whereas the lung has two functions, respiration and secretion, which it fulfils *alternately*, the anatomical disposition being such that it cannot fulfil

[1] The term *lobule*, or pulmonary acinus, is applied by the author to the enlargement at the end of the respiratory canal, which is further divided into *cellules* or cul-de-sacs, or compartments, communicating with the cavity of the lobule. This lobule is termed by some authors the *primitive* lobule, while they call the collection of lobules about an ultimate bronchial tube, the *secondary* lobule. The cavity of our lobule is variously known as the infundibulum (Rossignol), fusiform utricle (Kölliker) terminal cavity (Mandl), while the little compartments above described are called by other authors alveoli, terminal alveoli (Rossignol, Sappey), terminal cellules and terminal utricles (Mandl).

two functions at the same time, the *moment of excretion being that of expiration*. The excreted products are gases and vapours. The fact that carbonic acid and watery vapour are given off in respiration does not prove that they are not excreta. The fact that volatile oils, ether, chloroform, and alcohol are eliminated, proves that there is something else than a simple respiratory act. The mechanism of the secretion is precisely that of other glands, selecting certain substances carried by the blood, and permitting others to pass on.

The special products excreted are, 1st, azote; 2d, carbonic acid; 3d, watery vapor; 4th, organic matter. Although the absorption of oxygen and exhalation of carbonic acid succeed each other, the two are not inseparable, absorption of oxygen continuing while the excretion of carbonic acid is suspended or diminished; as in certain experiments of Vierordt and Duchek upon the ingestion of alcohol, and as is well known in cholera patients. On the other hand, the excretion of carbonic acid continues, while absorption of oxygen is interrupted, in cases of asphyxia by carbonic acid. The quantity of azote excreted is very small, but $\frac{1}{100}$ the quantity of carbonic acid. The latter is estimated at about 551 litres per day, in an adult, though the modifying influences of age and sex are admitted. The quantity of water excreted in a day by an adult is put at 500 grammes, though it is also variable, being influenced by conditions of the atmosphere. The organic matter excreted cannot be estimated, but is readily appreciated in the disagreeable odour of crowded halls and sleeping chambers, and may be the means of transmission of many diseases. Certain substances, accidentally present in the blood, are also eliminated by the lungs, showing that these organs evince an elective action, similar to that of other glands. As the liver seizes upon certain medicinal substances, as the salts of lead and phosphorus, the kidney on nitrate of potassa and iodide of potassium, the salivary glands on the mercurials, so the lungs eliminate certain volatile substances, as ether, camphor, musk, chloroform, and alcohol.

The evacuation of these excreted products, usually in other glands accomplished by *vis à tergo*, conjoined with a contraction of the ducts of the gland, is here attained by the elasticity of the air-vesicles or lobules themselves.

Opportunity is taken to state, what is now so generally admitted, that the lung is not the seat of a combustion, nor is it likely that this notion would have so long prevailed, had we always looked upon the lung from this double point of view.

Two experiments of Claude Bernard are quoted in concluding this chapter, as confirming the views of the author. Thus, it is stated that Bernard, desiring to study the absorbing power of mucous membranes, insinuated a solution of curare in the tracheæ of dogs and rabbits, and he noted that the respiratory surface absorbs with the same rapidity as the secreting and excreting ducts of other racemose glands (salivary, pancreas). The same experimenter injected air into the pancreatic duct of a dog, and immediately the gas filled the branches of the portal vessels which nourish the pancreas.

Chapter III. includes the consideration of *the rôle of the cylindrical, ciliated epithelium of the respiratory passages, of the muscular fibres of the bronchi*, and *certain pathological deductions*. These are subjects immediately interesting to us as pathologists and physicians. Being, also, subjects still unsettled, we are therefore eager for new information. The generally acknowledged doctrine that the ciliæ and muscular fibres are alike intended to urge mucosities from below upward, is denied, for two reasons. First, the existence of ciliæ in the upper respiratory passages (nasal fossæ), which, being directed horizontally, should not require the assistance of ciliæ. Second, the broncho-laryngeal mucus in health is not much, being only sufficient to moisten the mucous surface. Nor are they intended to remove excessive mucous secretions, the result of pathological states. This is accomplished by *cough*, which is a powerful contraction of the chest, which drives out the gases and air present in the lung with such force as to sweep away the bronchial mucus, as *by a violent blast of wind*. He considers the ciliæ as constituting a *species of sieve*, to the air which penetrates the lung, excluding foreign substances which would constantly enter with the inspired air. This appears a most reasonable function. Not only this, but they serve also to carry back the foreign substances which are thus disposed to enter with the air;

hence their existence throughout the whole extent of the respiratory passages. Confirmation of this view is seen in the condition of the respiratory passages of those exposed to dust of carbonaceous matters, or of extremely fine particles of steel, in whom these particles are arrested in the smaller tubes before they reach the air-vesicles, so that these smaller tubes are occluded before the air-vesicles collapse. Were they allowed to penetrate the air-vesicles, accumulations would be much more rapid, and death more speedy. The *rôle of the muscular fibres of the bronchial tubes* is no less interesting to us than that of the ciliæ, and much discussion has taken place as to their true function. Here, also, our author denies any agency in the expulsion of mucus, but believes it more rational to believe that the muscular fibres of the respiratory passages are comparable to those of the excretory ducts of glands, contracting during the excretion of the lung, in order to aid the evacuation of the products of excretion. This might appear inconsistent with the oft-repeated statement that the contraction of the lung is altogether accomplished through the elasticity of its structure, but is further explained by the following paragraph, in which we are told that the dilatation of the lung does not consist solely in the expansion of the tissue proper of the lung, but also in an augmentation of the calibre of the bronchial divisions. This *general dilatation of the organ excites the contractility of the circular muscular fibres*, which, by their contraction, aid the retractions of the pulmonary tissue, at the same time that they concur in the expulsion of the products of expiration.

The *pathological deductions* suggested by this question are claimed to be of great importance, and the author proposes to make them the subject of a special work. He desires, however, to present them succinctly in this place.

1. Thus, according to him, *asphyxia* is comparable to uræmia, the products of excretion being in both instances retained in the blood, in the one urea and uric acid, in the other carbonic acid and organic matter. It is admitted that the absence of oxygen hastens powerfully the death of the patient, but it is contended, also, that we must not lose sight of the double function of the lung.

With regard to *cholera*, it is well known that patients in the last stages of this disease, exhale a scarcely appreciable quantity of carbonic acid. Bernard having shown that the lung is supplied by two sets of nerves, the sympathetic and pneumogastric, as is the case with many glands, why could not the symptoms of cholera result from defective innervation of the lung, causing the excretion of carbonic acid to be suspended? We fear this is too wide an extension of the theory to be considered consistent with good reasoning, except it be admitted that such is the result of the gastro-intestinal symptoms, of which no mention is made. We cannot determine, therefore, the relation which our author conceives to exist between these two sets of symptoms. As we have been taught, it is only towards the fatal close of cholera that these respiratory phenomena are noted, and we cannot therefore discover any reasonable bearing on the true pathology or causation of the disease.

The results of Bernard's experimentations upon the sympathetic and pneumogastric are presented as furnishing ground for the belief that the pneumogastric is the nerve which presides over the excretory function of the lung, and not over the capillary circulation and nutrition as contended for by others; but that the sympathetic, here as elsewhere, presides over circulation and nutrition.

2. *Asthma*, as generally admitted, is stated to be a neurosis of the lung, but instead of consisting in a convulsive contraction of the muscular fibres of the bronchial tubes, it is rather an affection involving the terminal branches of the pneumogastric, and consequently the phenomena of pulmonary excretion. We cannot believe that it is intended here to deny all action of muscular fibres in producing contraction, yet it would seem so from the above language, which is literal. Certainly the physical signs which are familiar to all of us in spasmodic asthma, imply some diminution of the calibre of the bronchi.

3. *Emphysema.*—The "valvular" theory of Laennec as to the method of producing vesicular emphysema in bronchitis and tuberculosis is accepted, and that of Gairdner combated. The objection of Gairdner to the theory of Laennec, that if correct, we ought to have emphysema at the base of the lung, instead of

the summit and anterior border, is thus answered—that, although bronchitis is more serious at the base, yet it is everywhere present, while the summit and anterior border are almost the only parts which respire in the ordinary manner. If, on the other hand, the theory of Gairdner is correct, how formidable would be the emphysema of the opposite lung when one organ is long compressed by pleuritic effusion, or in unilateral tuberculosis? We think that clinical experience has actually shown these latter states to exist, yet that the plug of mucus admitting access to the air-vesicle, but impeding its exit, may not also operate in producing the dilatation, as contended for by Laennec and our author, we should hesitate to assert. In our opinion, both causes may operate to produce vesicular emphysema.

4. The so-called *etat fœtal*, or collapse of the lung, is singularly accounted for. Sabathier, of Montpellier, and Fuchs, of Leipzig, say that sometimes the air is absorbed from the air-vesicles by the pulmonary capillaries, thus producing a collapse. Dr. Fort says that this is the case, *not only sometimes, but constantly*, in connection, however, always with obstruction of the bronchus. He does not admit the valvular action of the plug of mucus, as suggested by Gairdner, which admitting the exit of air from the vesicles in expiration will not permit its entrance during inspiration, because he contends that always—except in forced expiration—the movement of inspiration is more powerful than that of expiration, and that, therefore, it does seem reasonable that the air passing in should not be able to pass the obstruction, while that passing out does so overcome it. In reply to the question which very reasonably suggests itself, how can it be that the same cause sometimes determines emphysema, and sometimes collapse? He says this difference depends very probably upon a difference in the anatomical state of the lung, and, perhaps, the condition of the lung. How reasonable this theory may be we do not pretend to state, but the author considers it confirmed by certain experiments of Mendelsohn. We must admit, however, that the objection to Gairdner's theory appears to us a valid one.

The conclusions arrived at by our author are, then, these:—

1. The lung, from an anatomical point of view, is a racemose gland.
2. This gland possesses a function similar to that of other glandular organs.
3. It is charged with eliminating the principal gases of the blood.
4. Many morbid phenomena in pulmonary affections, heretofore imperfectly understood, find a satisfactory explanation in the method in which we have viewed the lung from an anatomical and physiological point of view.

We are much indebted to Dr. Fort for the clear exposition he has made of this view of the anatomy and physiology of the lung. For although, as stated by the author, these views have been admitted in different degrees for many years, yet we have never had a complete exposition of them until now. While it is quite certain that many of the points made by the author have been lost sight of when we have been considering the lung as the seat of disease, and although we doubt whether they demand as much consideration as is claimed for them in certain phenomena of health, and doubt, also, whether some of the deductions can be sustained, yet we feel convinced of the very great utility of this paper in an anatomical and physiological point of view, and will leave the author to defend his pathological deductions in the more extended work proposed. Clear and intelligible plates, intercalated with the text, have greatly facilitated our understanding of the views presented. J. T.

ART. XXVIII.—*Les Institutions Médicales aux Etats-Unis de l'Amérique du Nord. Rapport présenté à son Excellence le Ministre de l'Instruction publique, le* 2 Décembre, 1868. Par le Dr. TH. DE VALCOURT.

The Medical Institutions of the United States. A Report to the Minister of Public Instruction. By Dr. TH. DE VALCOURT. 8vo. pp. 89. Paris, 1869.

THERE is a period in every one's life, the hobbledehoy period, when manhood is claimed and boyhood repudiated with an earnestness of conviction and a

resentment of doubt which is often very amusing and sometimes very annoying to the lookers-on. It may be presumed that nations, as well as individuals, suffer more or less from this mingled self-distrust and self-complacency, but certainly none have been afflicted with it so much as our own; for it alone was without an infancy, and began its existence at the uncertain period we have named. Its founders brought civilization with them, and the emigration which annually swelled their numbers carried into the common stock more or less of the culture of Europe. Not unnaturally, these unconscious missionaries of the old world over-estimated the magnitude and the value of their achievements, and their children exaggerated them still more extravagantly. Thus was begotten an impatience of foreign criticism which displayed itself in a sort of national excommunication of all authors who were so inconsiderate as to use their own eyes and pronounce their own judgment on American institutions. Some of these, who detected the foible, amused themselves with stinging their super-sensitive victims into a very ridiculous frenzy. But the days of this morbid susceptibility are gone; the manhood of the nation has been reached; it has passed triumphantly through trials such as no other government ever survived; it stands conscious of its dignity and strength on a perfect and acknowledged equality with the first nations of the world. It can not only bear criticism but invite it, and can lend as well as borrow new or improved ideas, forms, and methods. It has ceased to be provincial, it has become cosmopolitan.

The great event which announced as well as caused the sudden maturity of the United States, attracted an unusual degree of attention, not only to our political institutions, but to the social and educational, on which the value of political institutions entirely depends. It has so happened that the first author to describe the former intelligently was De Tocqueville, and the first to attempt an estimate of the medical department of our education is also a Frenchman, the author of the Report before us. The work of the one was planned and executed by an individual for his own satisfaction, the latter is an official paper prepared under the orders of the French Government. It is a promising fact for France that she is beginning to comprehend how imperfectly her borders inclose either the science or the skill of the world. Indeed, as the author asserts, the reaction from an exclusive and *quasi* Chinese policy has been violent as well as sudden, and threatens to cause many things to be esteemed merely because they are foreign, and not because they are valuable. There is no danger; such an evil invariably corrects itself.

Dr. de Valcourt, in the Introduction to his Report, thus epitomizes the general impression the "Great American Republic" left upon his mind: "The character and customs of the Americans," he remarks, "suggest an explanation of certain peculiarities in their public education, and prove that although it is well to become acquainted with the system of instruction adopted in a new country, disfranchised from the chains of precedent and routine, and enjoying plenty of elbow-room, it cannot be expected that the old world and the new should move in precisely the same path." Indeed, he finds strongly marked traits of dissimilarity in the unparalleled exactions of the custom-house, and is amazed that New York, which is destined to become—according to its own estimate—the metropolis of the civilized world, should meanwhile be "filthier and worse paved than the meanest country town in Europe." In spite of this unfavourable first impression, he soon grows astonished at the "immense moral force" which liberty, education, and a sense of their personal importance produce in American citizens; and while regretting their want of polish, at least in public life, he admires the practical good sense, the amazing energy, and the capacity for indefinite improvement, which distinguish them.

With these ideas the author entered upon the duty assigned him, and has given the results of his observations under three heads: 1. Medical Schools. 2. Medical Societies. 3. Hospitals. In connection with the first, the system of public schools, which is so peculiar to this country, attracts his attention. After briefly describing those of Boston, he remarks: "These statistics eloquently set forth the diffusion of education among all classes of society; and the instance we quote is not an exceptioual one. In all of the States the dissemination of knowledge is held to be the highest duty of the State, and the

most profitable employment of the public wealth." A sketch of our ordinary college education follows, and the remark is hazarded, that although the degree of A. B. is not required for admission to the schools of medicine, yet the more earnest (sérieux) students are generally provided with it. The most accomplished students certainly are; but very many thoughtful and earnest men find themselves crippled both as students and as practitioners by the lack of this very training. The number of our medical schools, and their independence of one another, naturally excited the astonishment of a European, and especially of a citizen of France, where education of all sorts, and most of all professional education, is intrusted to a selected few, whose merit and capacity have been thoroughly tested. Yet our author sees both good and evil in our system, or want of system, rather, and in enumerating its qualities he proceeds from good to bad, from better to worse, until by *a crescendo* movement he reaches the pinnacle and *ne plus ultra* of its abomination, thus: 1. It creates a very large number of professors, who labour assiduously, in order to improve themselves and render their lectures interesting and popular. 2. It renders the material accessories of teaching as perfect as possible. 3. It obliges the student to learn as much as he can in as short a time as possible. 4. It injuriously curtails the period of study. 5. It makes graduation too easy; and 6. It degrades the medical diploma. Most of these defects and errors are familiar enough to all who have had any share in the battle of medical education; but we do not remember that the single advantage here named as belonging to a multiplicity of schools has before been so prominently presented. *Qui docet discit;* and it cannot be doubted that the body of the medical profession in this country is saved from a moral eremecausis (to employ a euphuism) by the salt of science and learning which here and there are injected into it by local professors and journalists. But it may well be asked, as our author indeed implies, whether this leaven is sufficient to leaven the whole lump? whether a certain high degree of vitality at a few points can be deemed sufficient to neutralize the dark and torpid, or still worse, the self-satisfied ignorance of the great body of the profession?

To correct the defects of our system, and to develop its merits, the author would combine what he regards as two grand elements of improvement: Freedom to teach—Prohibition to practise, without a rigid examination by a State Board. Again, we must lament that he should be so unfamiliar with the history of medicine in this country as not to know that this very plan is half a century old at least, has been reproduced by many orators and writers upon the subject, and has been just as long and universally condemned by the more thinking, practical, and experienced men. If he had been better informed he would have known that in several States precisely such a system as he recommends is in operation, and that these States would certainly not be selected as illustrations of its beneficent effects. If the Board of Examiners were men of high professional rank, and compensated according to the dignity of their office, the plan would have much to recommend it. They would then have the strongest motives to strict honesty, and there would be a high probability of their being competent to perform their duties. In Europe such a plan is a natural one and the best, because the permanently governing class is enlightened, and possesses a high sense of public honour; in this country it would be the worst plan possible, because the governing class is the most ignorant in society, and its political representatives the most unprincipled of men. What could be expected of a system of professional education administered by graduates of the brothel and the grog-shop, of a class of men whose training has been perfected in all the baser arts of political trickery, and whose public and private conduct are alike a scandal to morality and a disgrace to civilization. On the politician's tomb, as we know him, the epitaph might well be written, *nil tetigit quod non* fœdavit. Many and grievous as are the defects of medical, and indeed of all professional education, in this country, we maintain that the members of the professions are far superior to the system under which they have grown up, because the individual has freer scope for the exercise of his abilities, and there are fewer artificial barriers to his success, than in the old world, so that the talented, ambitious, and laborious man is as certain of attaining eminence as of any future event whatever.

A circumstance is pointed out by the author which confirms the judgment we have ventured to express. He compares the requirements for the degree of M. D. at the commencement of our medical history with those of the present day, and, as we ourselves have often done, points out the fact, that considering the progress of science since that epoch, the schools have lowered their standard rather than elevated it. The fact is true, and yet it is equally true that the graduate of to-day is much better qualified to practise his profession than the graduate of thirty years ago, and infinitely more so than one of a century ago. It is very certain, too, as our author says, that a very small proportion of candidates for the doctor's degree are rejected, nor do we very much blame him for characterizing the method of private examination by the professors as "ridiculous;" but again, and without availing ourselves of the defence which he offers that the system is just as bad in London, we repeat that the men are better than the system; that the candidates are, in general, very well prepared; that the professorial examiners are rarely unfaithful in their duty, and that (*except in the important matter of practical skill*) the examinations are as rigid as they need to be.[1]

The author discerns less reason to find fault with American medical schools in other respects than in their method of examination; indeed he discovers something in them worthy of imitation. A full account is given by him of the organization of the Boston School and of the Bellevue Medical College, including a list of all their professors and lecturers and of the subjects taught by them, and a detailed description of the lecture-room and the laboratory of the latter. The comfort and neatness of the former he contrasts with the filth and discomfort of similar halls in France, and speaks with praise of the very rich museums of Boston and Philadelphia, while that of the Bellevue Hospital he describes as mean.

The crying sin of our medical education, the cramming system, he very clearly perceives and condemns. The students, he says, have no time for reflection, they cannot digest what they have swallowed, and the incongruous mixture of ideas necessarily gives rise to intellectual dyspepsia. "No wonder," he exclaims, "that after such a surfeit, the student should not be publicly examined. The result would be far from edifying." He states that nearly every professor he conversed with deplored the shortness of the term of study, but competition among the schools imposed the necessity of maintaining it, as well as the superficial examinations for a degree; the students could not afford the money or the time for a longer probation, etc. This hurried study of medicine, he thinks,

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[1] Since these lines were written we have received English medical journals in which the condition of the profession in Great Britain is represented as even worse than our author pictures it. According to the *Lancet* the attempt to regulate medical affairs by a general medical council, is a total failure. The council is described as a "most faulty body, absurdly constituted, and entirely inefficient," and this opinion is held "by certainly eight thousand practitioners, for they have signed a memorial to that effect." Yet, continues the editor, "we believe that there never was a greater number of well educated and intelligent medical men than there is to-day; still it is a fact that men whose education is a farce, and whose examination, for practical purposes, is little else, enter the profession." This statement corresponds closely with the estimate we have suggested of the medical profession in the United States. The writer who makes it hits upon the very same remedy for it, as Dr. de Valcourt does for evils that afflict us in this country; he would create a council of five or six medical men of high rank, "to meet annually, and to have the power to issue binding regulations as to the education and examination of students." We need not discuss this plan, which is quite feasible—whether judicious or not—in a country like Great Britain blessed by a single legislature. With us it would be simply impossible. The right to create such an authority does not belong to the government of the United States; and we have already said how it fares with those States which have adopted it. It is far better to have no law except natural law, the law which confers power on the strongest mind, than by legislation to foster fraud, and give the stamp of legitimacy to ignorance, imposture, and superstition.

is all the more to be regretted, because the courses themselves, are generally very excellent, the professors devote themselves enthusiastically to the preparation of their lectures, and receive the freshest contributions to science from foreign sources. The custom of illustrating lectures by large diagrams and drawings is warmly eulogized, and fully described. It deserves, he says, to be adopted in France, where, "for the lack of something of the sort, the lectures now and then grow tiresome for both teachers and pupils."

The second section of the work before us treats of the Medical Societies of the United States, which, it is very truly stated, stand in the room of governmental supervision, and prevent the profession from being overwhelmed by the ocean of quackery which covers the land. Several of these societies are described, especially the *American Medical Association* and the *College of Physicians of Philadelphia*. Of the last the author says that it interested him particularly; and he devotes several pages to describing its history, its building, and its "very rich museum of anatomy, normal and pathological." The Code of Ethics of the College, which is the same as that of the American Medical Association, seems to have struck him as "a perfectly original work, which in spite of its length I have translated." The translation, which is remarkably well executed, appears as an appendix to the volume. The Army Museum at Washington is described as "beyond all doubt the most curious, the most instructive, and the most complete in the world." Due praise is accorded to Assistant Surgeon Woodward and his associates for their histological preparations, and for the unrivalled photographic illustrations which they have published. The author was probably not aware that the conception and foundation of this museum, as well as many other intelligent and useful innovations upon the dull routine of official duty, were instituted by Dr. Hammond while he was Surgeon-General of the United States.

The concluding section of the report is devoted to hospitals. Those of Philadelphia are described first, but much more briefly than is desirable. Of the Almshouse it is said: "The wards and court yards are in a state of filthiness of which the managers ought to be ashamed." A very different judgment is pronounced on the Bellevue Almshouse and Hospital in New York: "Its wards are very clean," and the City Hospital of Boston is described "as so beautiful and so full of every sort of innovation, that it seems expressly constructed for the purpose of making everybody despair who is smitten with a passion for improvement." Those of us who imagine that the public institutions of our city are faultless and unrivalled, should take a lesson from this judgment of a courteous and intelligent traveller, and try now and then "to see ourselves as others see us." Some account of the gigantic establishment of New York known as the "Board of Public Charities and Correction," terminates the report, and offers a theme for very just encomium.

"Two lessons," says the author, "are to be extracted from this series of observations: on the one hand, the very liberty which Americans enjoy has led them to confide to special boards the most important portions of hospital management, to create powerful medical associations, and found numerous and flourishing universities; on the other hand, while desirous of maintaining perfect freedom of teaching, they perceive that to give and secure its proper value to medical education, and to the profession its due rank and dignity, is the province of the government *alone*." The first of these lessons is incontestably true; the second is, we have already remarked, a proposition which is altogether inadmissible. It would tend to degrade and not to elevate the profession, and would be opposed to that axiom of our republicanism that an enlightened public opinion is the best remedy for whatever evils may afflict society or any portion of it. That the author's judgment reflects that of some physicians is very probable; but all who have remarked the insult, degradation and injury to which even a partial dependence upon legislatures has subjected the medical profession in certain States, shrink with apprehension from a closer relation to the dispensers of political favour.

It is very much to be regretted that the visit of Dr. de Valcourt to this country was so brief, and at a season of the year when all the schools of medical instruction are closed. Had he devoted a longer time, and a more appro-

priate season to his mission, he would, we feel assured, have obtained more perfect impressions of medical affairs, have avoided several errors of statement, and have prepared what he is so well fitted for doing, a report which would have really enlightened his countrymen, and instructed while it did more impartial justice to ourselves. A. S.

Art. XXIX.—*Cold Water Treatment of Febrile Diseases.*

1. *Beobachtungen und Versuche über die Anwendung des kaltes Wassers bei Fieberhaften Krankheiten.* Von Dr. C. Liebermeister, etc., und Dr. E. Hagenbach, etc.

Observations and Experiments in the Treatment of Febrile Diseases by the External Application of Cold Water. By Dr. C. Liebermeister, etc., and Dr. E. Hagenbach, etc. 8vo. pp. 171. Leipsic: F. C. W. Vogel, 1868.

2. *Klinische Studien über die Behandlung des Abdominaltyphus mittelst des kalten Wassers.* Von Dr. Theodor Jurgensen, etc. etc.

Clinical Researches into the Treatment of Typhoid Fever by Means of Cold Water. By Theodore Jurgensen, M. D., etc. etc. 8vo. pp. 123. Leipsic: F. C. W. Vogel, 1866.

1. The pamphlet by Drs. Liebermeister and Hagenbach consists of two parts. The first is by Dr. Hagenbach, and contains an account of the results in 339 cases of typhoid fever which were treated by cold baths. The second part is written by Dr. Liebermeister, and is entitled "Experimental Researches into the Mode of Operation of the Reduction of Temperature in Febrile Disease." Both of our authors consider fever to consist of a "Group of symptoms which have their origin in the elevation of temperature caused by an increased metamorphosis of the tissues;" and they believe further that the severity and mortality of typhoid fever, and the amount of degeneration of the organs found after death, will almost always be found to bear a direct proportion to the degree of elevation of the temperature which had existed during life. It is, therefore, not extraordinary that they should regard that method of treatment as the best which had the greatest tendency to reduce the heat of the body. They do not claim for their treatment the power to cut the disease short. On the contrary, they expressly state that they believe this to be impossible. They do assert, however, that when the water treatment is employed—

1. The mortality of typhoid fever is rendered notably less.
2. Death occurs very rarely as a direct result of the high fever.
3. Even in fatal cases the course of the disease is more protracted.

Whenever baths are employed the temperature of the body will sink, and if they are frequently employed, this diminution of temperature will be permanent and the course of the disease consequently favourably modified. Complications, sequelæ, and relapses are said to be less frequent under this treatment than under any other, although it is admitted that it has not the power entirely to prevent them. Among other favourable results may be mentioned the infrequency of affections of the respiratory organs; in fact, pneumonia and bronchitis, if moderate, are not to be regarded as contra-indications to the employment of cold water: on the contrary, Dr. Hagenbach tells us that marked improvement in both these diseases will sometimes occur. In the same way the symptoms of cerebral disturbance are generally favourably modified by it, and a similar improvement in the manner in which the circulatory and digestive functions are performed is to be noted.

The mortality in the 339 cases was 33, or 9.7 per cent.; but this includes a number in which the treatment was only imperfectly carried out, and the epidemic during which the observations were made was a very severe one. The duration of the cases seems to have been unusually long; for we are told that in only 16.2 per cent. was the stay in the hospital less than 29 days; in 30 per

cent. between 29–42 days; in 23.8 per cent. between 43–56 days; in 16.2 per cent. between 57–70 days; in 12.5 per cent. between 71–100 days; and in 1.3 per cent. over a hundred days.

In regard to the application of the baths, Dr. Liebermeister thinks that in any case where the temperature of the axilla is 39° C.. or over, and the patient is naturally robust, a bath of 16° R. may be given and repeated every 2 hours. In cases in which the patient is feeble, or shows an invincible repugnance to the shock which the cold water occasions, a bath at 28° R. may be given, and its temperature gradually reduced to 18° R. The patient should remain in the bath when water at 16° R. is used 10 minutes, in the other case a somewhat longer time is required to produce the same effect. Baths frequently repeated have been found to be more efficacious in the reduction of the temperature than a prolonged bath. In mild cases, it is not necessary to administer the baths during the night, but in very severe cases it is absolutely essential that there should be no intermission in their employment. It might be supposed that this method of treatment would meet with some opposition from nurses and others engaged in the management of the sick, but such has not been found to be the case; on the contrary, it is generally a favourite with them, for the trouble which it gives is amply compensated for by the absence of delirium, of bed-sores, and of involuntary evacuations.

Where, from the absence of the necessary appliances, or in consequence of the age or timidity of the patient, the bath cannot be used, it may be substituted by the douches, packing, or sponging, all of which are, however, very much inferior means of reducing the temperature; for, to quote Dr. Liebermeister's own words, "We must therefore come to the conclusion, that a series of four successive packings, closely following one another, have about the same effect as a cold bath of ten minutes' duration, and double the effect of a cold douche."

It may be well to add, that Dr. Liebermeister does not consider it necessary to exclude all other treatment, for he gives quinia in large doses.

2. A careful reading of Dr. Jürgensen's little book, the author thinks, will convince any unprejudiced physician that the external application of cold water, whether in the form of a bath or of a douche, will at once reduce the heat of the body, and, as a secondary result, produce a marked improvement in all the symptoms of typhoid fever, and especially in those which proceed from derangement of the nervous system. Under the cold water treatment delirium and coma occur so rarely that observers have frequently supposed patients to be far advanced in convalescence who were still in the early stage of the fever. As the proper way of noting the temperature of fever patients, he recommends the insertion of the thermometer into the rectum, which gives rise to much less inconvenience than is generally supposed, and permits much more accurate observations to be taken than when the instrument is placed in the axilla. Whenever the temperature of the rectum is 40° C., the application of cold water is urgently called for, and should be instantly resorted to. The results of his treatment have been very favourable, as he claims not only to have reduced the ratio of mortality, but also the length of his patient's stay in the hospital. In 160 cases treated by cold water but 5 deaths occurred, while in the 11 years which immediately preceded the introduction of this treatment, 51 deaths in 330 cases are noted; or, to put the result in a still more striking way, of the cases treated with cold water 3.1 per cent. died; of those treated by other methods 15.4 per cent., or five times as many. It is true, the cases treated with cold water were of a slightly milder type than those which occurred before its use; but the difference in this respect was so slight, that it cannot alone explain the great decrease in the mortality. Figures are also given which show that under this treatment the patients were sooner able to return to work than under any other. It is to be recollected that in children the use of cold water may occasionally induce symptoms resembling those of collapse, and demanding prompt stimulation to save life. J. H. H.

ART. XXX.—*A Handbook of Therapeutics.* By SYDNEY RINGER, M. D., Professor of Therapeutics in University College; Physician to University College Hospital. 8vo. pp. 485. London: H. K. Lewis, 1869.

WE are not disposed to regard with approval the multiplication of medical "handbooks." They can seldom be of service to the educated physician, and it is better that the class of "students and young practitioners," for whom they are professedly designed, should cultivate the habit of consulting more comprehensive works—a habit which our most voluminous authors have rendered easy by systematic arrangement and exhaustive indexes. The text of this volume, however, is somewhat inconsistent with its title-page, and merits comment very different from that which the latter suggests. It is neither an expanded formulary nor a diffuse enumeration of drugs and the affections in which they may be employed; but really presents, very pleasantly written and attractively printed, the greater part of our practical knowledge of the application of remedies in disease. Controversial and speculative questions are, as far as possible, omitted; but the actual changes produced by medicines both upon the immediate functions and ultimate physiological processes, are so fully stated that the reader would be compelled to consider intelligently the determining indications of any special case before selecting a plan of treatment. It is not a prescription book, but a valuable scientific treatise.

Dr. Ringer gives proper prominence to several questions of daily importance, but which are often briefly treated as, perhaps, already sufficiently familiar, by writers upon Therapeutics. Thus, under the head of *Cold*, he dwells at length upon the subject of baths; giving a complete and practical analysis of the considerations which should determine us in directing them. We especially recommend the remarks upon *sea-bathing* to those whose ideas concerning it lack definition, and who fail to recognize the permanent injury resulting each year from the unwise employment of so powerful a remedy.

Blisters and counter-irritation are also very distinctly and intelligently discussed—not without need. After a full statement of the depressing power of blisters, and the proper limitations of their application, we cannot, however, agree with the author that "it is, perhaps, not superfluous to again caution against free vesication, for all the good effects of blisters will generally follow on the production of simple rubefaction." We miss from this chapter any allusion to the view, first brought forward by Dr. Chambers, and which would have helped our author to a more just conclusion, that blisters are really destructive agents during their rubefacient and vesicant action, and do not aid in the "renewal of life" until the healing commences in the sore which they have produced. Thus, the water-level of hydrothorax does not perceptibly fall until the blistered surface begins to re-form its cuticle.

Much confusion of opinion exists as to the indications and times for administration of acids and alkalies in dyspepsia. Indefinitely varied as the physical conditions which accompany similar symptoms of impaired digestion are, no rigid rules ought to be, or can be given; but there is an important hint in the following observation: Acids, "when taken into the stomach, possess the power to check its secretion; while, on the other hand, alkalies stand prominent among the most powerful exciters of the secretion of the gastric juice. From these facts the more general law has been inferred, namely, that acids possess the power to check the production of acid secretions from glands, while they increase the flow of alkaline ones; while the converse is the case with alkalies, which are supposed to check alkaline, but to increase acid secretions." When, therefore, we wish to aid imperfect digestion by stimulating the secretion of the gastric juice, we should give alkalies *before*, and acids *after*, food. On the other hand, when the stomach is "acid" from excessive or irregular formation of its secretion, acid should be given *before* food, and alkalies administered *after* it may neutralize, for the time, any irritating acid present either from unnatural secretion or subsequent fermentation.

Subjects at present earnestly discussed by the profession are prudently considered, but without any attempt at dogmatic decision.

In relation to the effect of calomel upon the liver our author states the various conflicting views, and adds with an evident, and, we think, wise disinclination to abandon ground so long held: "Yet the experience of generations speaks as strongly in support of the assertion that in some diseases the bile is increased by mercury." Leaving this special point, we are glad to see the general *corrective* influence of mercury upon the secretions in many morbid intestinal conditions fully recognized in the succeeding pages.

To *digitalis and its preparations* Dr. Ringer devotes much space, but has failed to be definite in his effort to be just. He does not, indeed, expressly indorse the dangerous doctrine that digitalis is a direct tonic to the cardiac muscles, but he seems to estimate imperfectly the evil results which may follow from its powerful sedative effect upon the general nervous system, and special centres of organic life; otherwise he could not recommend it in any but safely tranquillizing doses, nor sanction the enormous quantities originally given by Mr. Jones, of Jersey, in *delirium tremens*. If, indeed, digitalis is a cardiac stimulant, there can be no danger in tablespoonful doses of its tincture, even when the muscles of the drunkard's already exhausted heart are (and how very often is this the case) in a state of advanced fatty degeneration; but if this medicine produces its good effect by indirectly economizing force, and strengthening the heart's pulsations by diminishing the frequency of its action, how can it possibly fail, when pushed too far, to destroy both action and force together?

We are less surprised by the following record of our author's experience than by his comment upon it: "On two occasions on which it was administered, the patients suddenly fell back dead, although up to the moment of their death they had given no warning of this sudden and untoward termination. Whether the death in these instances was to be ascribed to the digitalis or to the disease, it is impossible to say."

The articles upon Anæsthetics are well written, but that relating to ether, too short. Its safety and value, as contrasted with chloroform, are not stated with sufficient emphasis. We do not think it correct to say "whether the mortality from chloroform is greater than that from ether, our present knowledge does not enable us to decide." Nor is this consistent with the statement immediately preceding: "Both ether and chloroform destroy life by arresting the movements of respiration; but there is an *additional* danger in the case of chloroform, from its depressing action on the heart."

The chapter upon Alcohol is extended, and we notice with pleasure a very full and satisfactory explanation of the relation of that substance to pepsine and the digestive function.

Dr. Ringer has been particularly happy in clearly condensing our knowledge upon the difficult subject of the vegetable alkaloids, especially those of a narcotic nature. The chapter on Conium possesses greater interest on account of the late work by Dr. John Harley on the "Old Vegetable Neurotics." The view here maintained, in accordance with a recent paper by Paul Guttman, differs materially from that of Dr. Harley. Both writers agree as to the general abolition of voluntary motor function produced by conia, but the latter refers this effect to the action of the alkaloid upon the cerebro-spinal centres, while the former has apparently proved that it depends upon paralysis of the periphery, and, later, of the trunks of the motor nerves. "For if a limb be protected from the influence of the poisoned blood by ligature of both its artery and vein, and the animal (frog) be poisoned and thoroughly paralyzed by conium, it can still perform powerful movements in the ligatured limb."

This leaves us, upon theoretical grounds, less hope of advantage from the use of conia in tetanoid affections; and we must the more earnestly appeal to bed-side observation as the only arbiter. The above account would seem to indicate that the action of conia is very similar to that of curare. The latter, however, is poisonous only when injected subcutaneously.

Physostigma Dr. Ringer still regards as a depressant of the spinal centres themselves.

Although many things have been purposely omitted by the author, we think

he should not have passed from the subject of *ipecacuanha* without reference to its use in tropical dysentery; and *valerianate of ammonia* and *nitro-muriatic acid* should certainly be added to the groups of their congeners. We would be glad to extend this notice, but must be content to recommend the volume to the profession, believing that even the most experienced will find in it some valuable suggestions. As we hope the author will hereafter publish a much larger treatise, and, at an earlier day, another edition of the present work, we call his attention to two verbal errors which ought not to mar so good a book. Thus, "lay" is repeatedly employed for "lie," and the sanction of frequent use is given to the awkward and unnecessary word "preventative." "Roulleaus," "post-partem," &c., we leave for the printer's care. The book appropriately closes with a Posological Table (from Dr. Garrod's Materia Medica); a Dietary for Invalids; and two Indexes—one of diseases, the other of medicines. We suggest that in the preface to the next edition there be some explanation of the apparently arbitrary classification of subjects. E. R.

ART. XXXI.—*The Climatic Treatment of Consumption and Chronic Lung Diseases.* By JOHN C. THOROWGOOD, M.D., &c. &c. 8vo. pp. 100. London: H. K. Lewis, 1868.

THE fact that a climate which is of service to many consumptive patients may prove injurious to others, would probably be admitted by a majority of our profession, but it is certainly one very generally overlooked in practice, for patients whose general condition indicates that they would be benefited by a cool, bracing air, are constantly sent to places with a warm, relaxing, and sedative climate. Some cases, it is true, demand a climate of the above description, and would as certainly be injured by the cool, bracing atmosphere, which is so restorative to others. But, moreover, in choosing a climate, we are to be guided, not merely by a consideration of the stage in which the disease happens to be, but also by the susceptibilities and idiosyncrasies of each particular patient. The little book before us, although it contains nothing absolutely new to any well-educated physician, is well written, and contains much useful information in regard to the climate of most places of resort for phthisical patients, both in England and on the continent. Warm and cold countries are both useful in different conditions of the system, and we are told that the cases which are likely to receive benefit from a warm, moist, and sedative climate, are those which manifest a "tendency to general irritability of the system, with great proneness to intercurrent attacks of inflammation on the air passages, and at the same time fair action of the stomach, liver, and bowels." It will, moreover, be beneficial to those suffering from laryngeal phthisis in its early stages, and to those convalescent from some acute pulmonary disorder, such as bronchitis or pneumonia. On the other hand, "those who have much languor of system, profuse sweating, excessive expectoration, tendency to biliousness, to hepatic congestion, or to diarrhœa and dysentery, will get nothing but harm from a warm, sedative climate, and therefore must by all means avoid it." But in phthisis, after inflammatory symptoms have subsided, this kind of air is not likely to be of any further service, and may be of positive disadvantage, as it has a tendency to check the secretions, especially those of the liver, and consequently to derange digestion. On the contrary, even those who are far gone in consumption will frequently feel the good effects of a cool, bracing air, in the improvement of their digestion, enabling them to assimilate cod-liver oil and other medicines, which previously have induced nausea.

The reason for the general avoidance of cold climates on the part of consumptives, is simply the old prejudice that phthisis is more frequent in cold than in warm countries; this is shown to be an error, for in Iceland the disease is almost unknown: no phthisical patients are seen in Denmark, and Swedish physicians affirm that consumption becomes much less common as we proceed

northward, and it is, as is well known, very infrequent on the northwest coast of Scotland. This prejudice had undoubtedly much to do with the origin of the treatment, by which patients were confined to close, ill-ventilated apartments, and prevented from exercising in the open air, especially in winter, a treatment which still, strange and irrational as it may seem, has some advocates. In discussing this subject, Dr. Thorowgood shows by figures that the disease is common to workmen in direct ratio to the degree of crowding and deficient ventilation of their workshops.

The book, although containing much that is of general application, has been written especially for English physicians, and that it has been thought well of by them is shown by the fact that it has reached three editions in a very few years. To the present edition is appended a chapter on the diet of consumptives which will be found to contain some useful hints. J. H. H.

ART. XXXII.—*The Principles of Naval Staff Rank; and its History in the United States Navy for over a Half Century.* By a Surgeon in the U. S. Navy. 8vo. pp. 240, 1869.

FEW readers of this journal have not heard something of a controversy about the official relations of medical men in the navy, which has been carried on more or less actively, between the "line" and medical "staff," during very many years. The American Medical Association has frequently spoken in behalf of the pretensions of those of the profession who have chosen military service as the field of their labours. Their number in the navy is limited by existing laws to two hundred, all of whom are carefully selected through the agency of boards of competent examiners, and for this reason it is only fair to suppose they are respectable representatives of the body of the medical profession in the United States. But professional respectability, or even professional efficiency of unexceptionable character in so small a body is not influential enough to obtain from Congress a recognition of the claims of its members to a fixed position relatively to others embraced in the naval officiality. It is believed that these gentlemen have the sympathy of the profession. This well written pamphlet is designed to present to it a summary of the arguments which have been adduced in favour of, and against the pretensions of medical men in the navy to just consideration, in order that their friends may be able to understandingly afford them the benefit of their influence.

Medical officers in the navy ask to be assigned by law an appropriate position relatively to other officers of every class and denomination in the military organization of which they are essential members, that no one may doubt who are their superiors or inferiors—that they may know to what privileges and immunities they are entitled according to the laws and customs of the community in which they officially live.

This position of relationship is technically termed RANK. Military rank means nothing more nor less than relative position in a military organization. There are some who, possibly from a contemplation of English aristocracy through hazy distance, place a vague and indefinite construction on the term. Such persons tell us that rank is "sacred," and is to be defended at the risk of life itself—always provided, however, that it is not the rank of staff officers which is in danger. The rank of an officer is simply his definite position relatively to other officers, and is "sacred"—to be guarded jealously—solely because it is the indication, if not the exact measure, of his importance and authority, as well as of his personal comfort.

A distinct comprehension of the merits of this controversy will be best reached, by our readers, through a clear understanding of the meaning of technical terms. Under this impression we submit the following definitions:—

The terms "line" and "staff" are employed to designate the two classes of officers which essentially complete every military organization.

The "line" of the navy of the United States consists of eleven grades of officers, namely: 1. Admiral; 2. Vice-admiral; 3. Rear-admiral; 4. Commodore; 5. Captain; 6. Commander; 7. Lieutenant-commander; 8. Lieutenant; 9. Master; 10. Ensign; and 11. Midshipman.

These grades constitute a scale, a series of steps. The naval cadet on graduating at the naval academy takes his place on the first step, in the grade of midshipman. Through serving in it he becomes qualified to be advanced to the grade of ensign. Service in this grade renders him eligible to appointment in the grade of master; and so on, from grade to grade, till he is promoted to that of admiral. Service in the lower grade is essential to his advancement to the next, progressively from the lowest to the highest, and this mode of promotion from grade to grade through the series, perhaps constitutes the reason why this classification of grades is denominated the "line."

A definite degree of official authority attaches to each grade. The title of the grade defines in a manner the limits of its functions. The duty of the three grades first named is limited to command fleets or squadrons; that of the three next—who are in fact, first, second and third class captains—to command single ships of the first, second and third rates; and that of all the others is, generally speaking, subordinate. Details in the management of guns and sails, and the administration of affairs on shipboard are assigned to them under the general direction of those duly placed in command.

The official power and importance of the officer increase as he is advanced in the "line;" and each step of advancement brings with it additional emolument and increased honours, privileges and immunities which contribute more or less to his personal comfort and convenience on board ship. But he incurs little if any increase of responsibility till he reaches the grade of lieutenant-commander, when he is eligible, though not absolutely entitled, to command a vessel of the fourth rate, for the reason that in military organizations responsible authority is centralized in the commanding officer. If a ship is stranded through the miscalculation of the navigation officer, or lack of vigilance of the officer of the watch, or surrendered to the enemy, the loss is charged upon her commander, and he is held for trial by a court-martial. He may plead, in extenuation, the faults of his subordinates, but without releasing himself from responsibility in the premises.

Official power descends, in a manner, from the highest to the lowest grades, and, also, from the senior to the junior of the same grade in the "line," because obedience is always due from the official inferior to his superior. It may be truly said that the "line," in military service, constitutes a military hierarchy, and that in it conflict of authority never occurs, because no two officers even of the same grade are equal in rank. Each is superior to every one below him and inferior to every one above him in his grade.

Although authority of general command is vested in it, the "line" is utterly powerless to execute any naval enterprise whatever without the aid of the secondary class, the "staff," so denominated because it is designed to afford necessary support in various ways.

The staff of the navy comprises medical officers, paymasters, engineers, chaplains, carpenters, &c. The corps, formed of each vocation, are organized after the manner of the line. The medical department includes grades of surgeon and assistant-surgeon; the office of surgeon of the fleet is temporary, and the title ceases with the discharge of the duties. Assistant-surgeons who have been found qualified for promotion are called, while waiting for advancement, passed-assistant-surgeons, but they do not constitute a grade according to law. The pay department consists of grades of paymaster, passed-assistant-paymaster and assistant-paymaster; and the engineer department, of grades of chief-engineer, first-assistant-engineer, and second-assistant-engineer, but the corps of chaplains, carpenters, sailmakers consist of one grade each. Rank in each staff corps is as well defined as rank in the line, or in any grade of the line, and therefore there can be no conflict of authority among the members of the same staff corps.

But between officers of the line and staff officers there is conflict, because the latter have no rank which the former are forced to respect, and because they sometimes resent what seems to them arrogant assumptions which are occasionally intolerable, even by the least sensitive minds. If medical men could be brought to acquiesce pleasantly in the opinion of the line on the question, and consequently be dependent upon their own personal tact to obtain, through the condescension or courtesy of the line a fair share of the little advantages of position, and exemption from petty aggression in any of its numberless forms, then there would be harmony; but such a harmony as characterized the relations between exacting masters and obedient, or unresisting slaves.

In general terms it may be said that on this question one-half of the officers of the navy are arrayed against the other. According to the navy register of January 1, 1869, the line—the military hierarchy—included 704, and the staff, 597 officers; and according to the register of July 1, 1869, the line consisted of 763, and the staff of 549. Between the dates of the two registers (six months) the line has been increased 59, and the staff has been decreased 48, the number of vacancies in the medical staff.

As long ago as 1812, the surgeons of the navy asked to be assigned a rank relative to that of officers of the line, who called themselves "officers proper" of the navy, and were generally termed "sea officers," while those of the staff were improperly denominated "civil officers."

Some of the most distinguished naval captains of those days sustained the application of the surgeons. But it was not until 1846 that any official answer was given to them. Then, Secretary-of-the-Navy Bancroft, finding that the officers of the line "were impracticable and would agree to nothing, and that Congress would do nothing, took the initiative" in conferring a rank on the medical staff. He issued a general order, as follows:—

"Surgeons of the fleet and surgeons of more than twelve years will rank with Commanders; Surgeons of less than twelve years, with Lieutenants; Past Assistant Surgeons, next after Lieutenants; Assistant Surgeons not passed, next after Masters. Commanding and executive officers, of whatever grade, when on duty, will take precedence over [of] all medical officers.

"This order confers no authority to exercise military command, and no additional right to quarters. GEORGE BANCROFT."

NAVY DEPARTMENT, August, 31, 1846.

To defeat the operation of this order, many officers of the line resorted to quibbles and subterfuges, in some instances worthy only of the low cunning which characterizes the most degraded among pettifogging attorneys. They declared it to be unconstitutional; that the Secretary of the Navy had no legal authority to issue such an order; that it was incomprehensible, and therefore could not be executed—that it was fraught with injury to the best interests of the service; that every officer was a commanding officer to a greater or less extent, because he could not discharge his duty without issuing commands; and that every officer is an executive officer, as long as he was executing the orders of his superior. To them it was a muddle, though they clearly understood that medical officers had no authority and no right to quarters. Under the construction given to it by the "line," this order was without meaning, and not susceptible of practical application in any manner or degree. They objected generally, that the surgeons were seeking rank in order that they might claim a share of the ship's cabin; or to qualify themselves to command ships, because, they said, erroneously, however, "rank carries with it the right to command." This reason is remarkable, only because it was urged before passed-assistant surgeon E. K. Kane and Dr. I. I. Hayes had become renowned commanders of Arctic exploring expeditions.

In vain medical officers urged that the construction of the order is plain; that the term "commanding officers" was used to designate those officers who are assigned to command ships or posts; that the term "executive officers" indicated those who were generally recognized as "First Lieutenants," or "Senior Lieutenants," because executive officers are temporary creatures, and

do not form a grade known to the law. They contended that every command which can be enforced under military laws is, *ipso facto*, a military command—and for this reason the plain intention of the phrase "no authority to exercise military command" is that medical officers shall not command in the line; that the words "no additional right to quarters" means simply that a surgeon, though he ranked with commanders, could not claim to share quarters in the cabin with a commander of the line, and that he should be quartered, as he had been previously, in the ward-room with the lieutenants and others; that "next after Lieutenants" means to rank with, but always junior to, "line" officers of that grade.

The Secretary of the Navy was unable to induce officers of the "line" generally to obey this order. The medical officers were left to their courtesy; and, although Congress legalized it August 5, 1854, the controversy still continued.

Contumacy in this respect may have its origin in external influences. The educational system under which they are reared at the naval academy, the habit of living together afloat in small companies, often seggregated from general society for months or even years, and their constant use of the imperative mood in their official intercourse with shipmates, are calculated to beget and foster in line officers excessive self-appreciation, and at the same time, perhaps, an underestimation of the worth of men of different pursuits. Naturally modest and sensible persons under such influences may be made self-sufficient, opinionated, and learn to entertain extravagant notions, and even fancy themselves to be of a higher caste than the average citizens of the republic. Men with minds so moulded may be found employing for private or personal ends the power which is conferred on them for official purposes exclusively, sometimes much to the annoyance of those placed under it. A commodore of this type might exact more from a midshipman than from a lieutenant-commander; but holding a defined position relatively to himself, being of his own vocation and heirs to his office in the order of their official precedence, he would probably be more forbearing under like circumstances to either, than to any one not of the catenate succession. In his estimation those of inferior caste can have no rights of any kind which may possibly conflict with his own—as he supposes them to be. He feels sure there is no caste superior to his own, and hence he manifests his contumacious spirit when any attempt is made to bound its powers.

Debate has brought no conviction to the "line," because it entertains a deeply-rooted feeling in place of opinion on the subject, which partakes of the nature of all caste prejudices which have a traditionary support and existence: as fast as the arguments with which it surrounds its position are overthrown it entrenches itself in new ones. Its discomfiture in argument serves only to intensify its feeling of hostility. The struggle will probably continue until Congress, the only competent authority in the premises, shall be pleased to enact an appropriate law to regulate the official relations between the "line" and the "staff" corps of the navy.

When Mr. Bancroft's order was issued the "line" included only six grades, namely, Captain. Commander, Lieutenant, Master, Passed Midshipman, Midshipman. The rebellion came. The prowess of the navy deservedly won the applause and favour of the people. As a matter of course, officers of the line were conspicuous in every naval enterprise. Congress, in recognition of the services of *the whole navy*, and in compliance with views which had been long previously pressed on its attention, established additional grades of line officers, July 16, 1862, but passed unnoticed the services of medical and other staff officers. Some medical officers were killed and some were drowned in battle—their vessels sinking in the fight; eleven were taken prisoners by the enemy in one year; some died of disease contracted in the line of duty; and some, prematurely exhausted while yet in the prime of manhood by excessive professional toil and exposure, were placed on the "retired list," and left, without ability to work, suffering from health, hopelessly ruined, to contend for a pinched existence on the very slender income the law allows. Such evidence of professional zeal and efficiency Congress did not heed. The "line" swallowed up all the attention and favour it had to bestow upon the navy; or it did not consider staff

services (which, though unattended by noise or display, cannot be rendered without risk of life and health) worthy of special recognition or reward.

The medical and all other staff officers conceived, however, that inasmuch as active service exposed them to perils and privations alike with their associates of the "line," they are alike entitled to analogous rewards for their services. The navy department believed that the "staff" had earned a title to consideration.

Congress enacted, July 14, 1862, "That the orders, regulations, and instructions heretofore issued by the Secretary of the Navy be, and are hereby recognized as the regulations of the navy department, subject, however, to such alterations as the Secretary of the Navy may adopt, with the approbation of the President of the United States."

After consulting Attorney General Bates, President Lincoln, and members of his cabinet, it was determined that the Secretary of the Navy was authorized by this law to confer additional rank on the staff officers. He accordingly issued regulations, March 13, 1863, designating the classes of staff officers, and conferring relative rank upon them. The following refers to the medical department:—

"Assistant Surgeons to rank with Masters.

Passed Assistant Surgeons to rank with Lieutenants.

Surgeons to rank with Lieutenant-commanders for the first five years after promotion; after the first five years, with Commanders; and after fifteen years date of commission to rank with Captains.

Surgeon of the Fleet to rank with Captain."

The medical staff believed itself to be entitled to higher degrees of relative rank, and pointed to the positions occupied by medical officers in foreign navies to support the pretension.

A bill to regulate the relative rank of medical officers, which was satisfactory to the corps, and approved by the naval committee, Admiral Farragut and other distinguished naval officers, was reported to the House of Representatives early in January last. It was discussed by gentlemen who were not well informed in the premises, and defeated through promptings of officers of the line who instructed their friends vaguely and generally, but in such manner as to impose false impressions, and create false issues. Rumor says that money was freely contributed by officers of the line to strengthen their opposition to the staff.

General Grant was inaugurated President of the United States. Mr. A. E. Borie was appointed Secretary of the Navy. He assumed the duties of the office March 8th, and it very soon became apparent that he was the leader of the line faction hostile to the staff corps. He issued orders in rapid succession adverse to the interests of staff officers. March 10th he ordered that "commanding and executive officers, ashore and afloat, will take precedence over all staff officers," and on the 11th he directed the uniform dress to be changed disparagingly to the staff; "the practice of covering the berth-decks of vessels of war with shellac to be discontinued"—a sanitary measure suggested by medical officers to abate the dampness of the men's sleeping apartment: yellow paint—applied by advice of staff officers to spars to lessen the extent of rot by reflecting instead of absorbing the sun's rays—to be superseded by black, which experience shows to be more expensive, and injurious: executive officers to be recognized as representatives of their commanding officers, and, ashore and afloat, their orders to be regarded as emanating from the latter, and they are to take precedence of staff officers on all occasions:—medical and other staff officers serving in the capacity of officers of the fleet, as fleet surgeon, &c., are instructed not to wear the uniform of the higher relative rank after being relieved from the duty (thus conveying to the public an offensive, and, it is believed, groundless imputation against the decorum of staff officers);—commandants of navy-yards are directed to send the Secretary any bureau regulations which, in their judgment, "may take from the authority of the line officers of the navy:"—all honors hitherto paid to fleet surgeons, paymasters, and engineers, due only to commanders of vessels to be discontinued. No fleet officer to order any survey, or "go on board any vessel of a squadron

to make an inspection or examination of any kind, without special written orders from the commander of the squadron." The law (May 24, 1828) requires the surgeon of the fleet "in difficult cases, to consult with the surgeons of the several ships;" but under this general order he cannot, without a special written order from the commander of the squadron.

Such is the substance of seven of the thirteen distinct general orders issued in a single day, March 11th. That part of the "instructions to medical officers" which requires the fleet surgeon to order boards of medical survey was annulled March 12th, and on the 15th the order giving rank to apothecaries—relatively to boatswain's mates—was revoked.

Within twenty-four days after Mr. Borie began to administer the affairs of the navy department, the rank conferred by the regulation of March 13th, 1863, and the regulation itself, were annulled, with the effect of greatly reducing the very small pay of all staff officers on the retired list. At every point where the medical staff was vulnerable, an attack was made, seemingly for the purpose of humiliating it and elevating the line proportionately.

About the same time, Senator Grimes, chairman of the naval committee, had passed by the Senate a bill which abolished the bureau of medicine and surgery, and reduced the rank of all medical officers lower than it had ever been. This bill, most objectionable in all its features, without a single exception, in the opinion of very many men of ripe judgment, is still in the hands of the naval committee of the House of Representatives, although Mr. Borie earnestly urged that it should be reported and passed without amendment.

In the face of all these circumstances, Surgeon Pinckney stated to the American Medical Association, at New Orleans, in May last, among other things, that "the medical corps was never placed on a firmer basis than at the present moment." A majority of the medical officers "repudiate his whole speech in letter and spirit, because it is not an exposition in any degree of the views of the corps," and they declare themselves thoroughly dissatisfied with the position to which they have been recently reduced, and alarmed at the still further reduction proposed in the bill of Senator Grimes. They repudiate Surgeon Pinckney's "statement" solely because of its publication by the line as evidence that the medical staff is content with its humiliated condition.

In this connection it may be stated that a court-martial has been in session recently, in Washington, to try whether a medical officer has authority to determine that a patient shall be released from the discharge of his duties in opposition to the opinion of his commanding officer. The question was submitted in a charge of "disobedience of orders," against Passed Assistant-Surgeon Charles L. Green, preferred by Lieutenant-commander Thomas O. Selfridge, of the Nipsic, through the Secretary of the Navy, the specification being that Dr. Green had refused to discharge from the sick-list a man who was suffering from a cutlass wound of the scalp, when ordered by his commanding officer. The result of the trial has not been officially published. If it should be determined that the medical officer is incompetent to decide, against the opinion of his captain, whether a patient is or is not physically qualified to perform his duty, neither officer nor man, when sick on board ship, has any refuge from the contingency of annoyance or even cruel treatment by a commanding officer who possibly may be a man of narrow intellect, and of a capricious or tyrannical disposition, or, even worse, he may be a martinet. It is believed, however, that it has always been conceded in all military services, that it is among the peculiar functions of the medical officer to determine who is or is not in condition to be released temporarily from duty, on account of physical ailment. It seems remarkable that the Department submitted such a question to legal discussion.

It is contended that every member of a military organization should have a definite position in it, which is not contingent upon circumstances of any kind; and that the position of medical officers should be, to some extent at least, indicative of their importance or value in it. The rank of medical officers relatively to the "line," in the French and Austrian navies, rises to that of rear-admiral; in the British, Russian, and Spanish navies, as high as vice-admiral, and in all of them they receive the honours and wear the uniform dress pertaining to the rank. There is no exception made in favour of "executive officers." The

rank of medical officers, be it what it may, is fixed, and its privileges or immunities are never contingent upon the presence or absence of a line officer of inferior rank, called "executive"—whose official functions are local—temporary; he is simply the agent, the *locum tenens* of his commander, whose general instructions he executes, without authority to originate any order.

To a private citizen naval rank of any degree is worthless, perhaps absurd; no statesman, scientist, physician, or lawyer, labours assiduously in his vocation to win as a reward a legal right to be of the same rank as a commodore or even admiral in the naval service.

"But officers of the medical staff, as well as those of other staff corps, have learned from 'the line' to appreciate the value of rank in the navy; and they have also learned, from some other source however, to believe implicitly that merits of all kinds are brothers, and, in the same community or organization, are equally entitled to rewards and distinctions of the same nature. Their faith in this doctrine is so firm that it cannot be shaken by the assumption that 'the line' is the whole navy, and that to it exclusively belong all the merits, all the distinctions, and all the rewards, as well as all the honours and glory won by the joint efforts of men who, though not of 'the line,' are recognized nevertheless to be honest, intelligent, skilful, brave, and patriotic. But in preferring their own claims, they wish not to disparage others in any degree. They cheerfully recognize the merits of 'the line,' and rejoice that its efforts, aided by the staff, have deservedly won reward and public approbation."—p. 145.

The pamphlet before us is a fair exposition of the subject, and embraces, perhaps in too much detail to interest the general reader, views of every aspect of the question. No one can read it without a conviction that Congress should, without unnecessary delay, enact such a law as is calculated to put an end to a controversy which has lasted too long, probably with detriment to the harmony which should characterize an organization composed of gallant and intelligent gentlemen. In such a community Congress should not permit well-founded dissatisfaction to exist for want of a law to remove it.

Inasmuch as the degree of rank accorded to medical men in the military establishments of the nation may be regarded as a measure of the common estimation of the profession by the public, the subject is of general interest to all physicians and surgeons. We offer this reason in excuse for a somewhat extended notice of this pamphlet, which is exhaustive in its character.

W. S. W. R.

ART. XXXIII.—*Report on the Diseases of Cattle in the United States, by the Commissioner of Agriculture.*

A REPORT on the diseases of cattle in the United States is now being published at Washington under the direction of the Commissioner of Agriculture. If the gentlemen selected for the other portions of the work be as competent investigators as those to whom the asserted causation of some of these diseases by fungi has been intrusted, the report will be of the deepest interest to medical men as well as of very great practical importance to the country. It seems to us that in no other way can the department spend its funds more advantageously; the general ignorance on the subject being so great and the money value concerned so enormous. We sincerely hope that Congress will make a sufficient appropriation to enable the Commissioner to issue the final report in a style commensurate with the importance of the subject, and which may bear comparison with the magnificent volumes published by the government of Great Britain on the cattle plague.

We have been favoured with early sheets of the report of Drs. J. S. Billings and Edward Curtis of the Surgeon-General's Office, to whom was intrusted the examination of the blood of infected animals, also with that of Mr. J. W. Ravenel, than whom no more competent person could have been selected to examine the fungal flora of the territory in which the "Texan disease" originates.

Mr. R collected two hundred and eighty-two distinct species of fungi, but "was surprised to find comparatively so few of the entophytal coniomycetes which infest living plants, the rusts, smuts, etc." He failed entirely to find the Coniothecium Stilesianum of Hallier, the asserted cause of the disease, or any plant allied to it, although he examined most carefully the living grasses, the dead wild grasses of the previous year, as well as the hay on which the animals were fed. Of course his not finding them is only a negative proof, but to any one acquainted with Mr. R. it is very strong presumptive evidence that no such plants existed there.

The results obtained by Drs. Billings and Curtis are still more decisive. Their duty was to answer the following questions:—

1. Are any forms of cryptogamic growths present during life in the blood or secretions of the diseased animals?

2. If so, of what character are they, and what is their probable source?

In introducing an account of their experiments the authors of the paper state very clearly the latest position that the advocates of the cryptogamic origin of disease have assumed, as follows:—

"The fungi which are supposed to cause disease in animals are, when in their perfect state, or at least in such a state that they can be identified, composed of mycelium and spores. But according to the advocates of the cryptogamic origin of disease, neither the mycelium nor the spores of the fungus that produces the malady are necessarily or even usually to be found in the fluids or tissues of the affected animal, their theory being that the disease is produced by the presence in the economy of minute particles of protoplasm (micrococcus of Hallier), resulting from the development and breaking up of the spores or mycelium of a fungus; from which granules, they assert, can be developed perfect forms of fungi, of recognizable genera and species, by proper 'cultivation' outside of the body of the animal fluids containing them.

"Thus, when the blood of a pleuro-pneumonic cow fresh from the vein is examined with a magnifying power of 1200 diameters linear, nothing distinctive or unusual may appear; the red and white blood corpuscles may be perfectly normal, and nothing like spores or mycelium will be seen. But there will probably be, either single or in masses, some minute granules or molecules appearing as glistening points scattered over the field. If such are not present at first, by keeping the blood exposed to the air for a few hours they may be found in abundance.

"Now it is these little molecules which are asserted to cause disease by their presence in the animal economy, and which are claimed to be vegetable in their nature, as being developed from and capable of reproducing certain common fungi, popularly known as rusts, smuts, or moulds.

"To prove the truth of the latter statement, experiments have been made by various investigators on the principle of placing the fluids containing the micrococcus in the proper conditions as regards warmth and moisture for the development of fungi; supplying the germs with suitable pabulum for their nourishment, and adopting such precautions as are possible against the fortuitous introduction of spores of fungi from the atmosphere. And if under such circumstances a mould or mildew appears upon the suspected matter, the argument is that such mould necessarily sprang from the micrococcus granules as its parent germs, and therefore represents the perfect fungus of which such micrococcus is a special form.

"Now, since the spores of the common moulds are almost omnipresent, the conclusiveness of all such experiments must depend upon the possibility of showing that all extraneous bodies have been perfectly excluded from the fluids cultivated."

In order to prove that all possible precautions were taken by themselves, Drs. Billings and Curtis then minutely describe the apparatus used. These were the "isolation apparatus" and the "culture apparatus" of Hallier slightly modified and, we think, improved, and "growing slides." Almost all the various described varieties of the latter were employed, as well as a new one invented by the authors. Their description of this is as follows:—

"For the general purposes of a growing slide, that which has given the most

satisfaction is made by laying on an ordinary glass slide, three inches by one, a piece of thin, fine, white blotting-paper of the same size, with an opening in the centre three-fourths of an inch in diameter, or a little less than that of the thin glass cover used. The edges of the paper may be cemented to the glass with a little Canada balsam, although this is not necessary.

"To use it, put in strong alcohol for ten minutes, then in distilled water for the same length of time; free the central opening from water; place in it a drop of the fluid to be cultivated, and cover it with a very thin glass cover. Care must be taken to keep it perfectly flat. Place the slide in a culture apparatus, in which water alone is used as the isolating fluid; let one end of a piece of sewing thread rest on the end of the slide, and the other dip into the water.

"If the slide is to be used without being placed in a moist chamber, the paper should be covered with a piece of thin sheet-rubber or oiled silk, of the same shape and size, and with a corresponding opening. If it be desired to use high powers, or to trace the germinations of a spore found in examining a slide, the glass cover may rest on the slide, and the blotting paper be placed on instead of under it.

"If it is desired to develop the fruit, the drop of alimentary fluid should be small, and a groove should be cut in the paper to the edge of the slide to allow the admission of air. The amount of moisture can be regulated at will by varying the size and number of the threads used to keep the paper wet. This slide is simple, cheap, and susceptible of being so modified that it is available for almost every purpose for which a growing slide is required.

"Another form of development apparatus which was used towards the close of our experiments consisted of a six-ounce glass beaker, having a little water at the bottom, and hermetically closed by a piece of thin sheet-rubber tightly stretched over the top. From the centre of this cover there was suspended by a thread a strip of thin blotting paper, which had been previously soaked in alcohol and distilled water, and on which the material to be cultivated had been placed. The thread was attached to the cover and the paper by Canada balsam. This is a sort of isolation apparatus, and is more satisfactory than the one used by Professor Hallier.

"The material or substratum upon which the cultures are made, and which is intended to furnish nutriment to the fungi, is of various kinds. We used extract of beef, healthy blood, condensed milk, solutions of cane and grape sugar, pulp of lemon, orange, potato, &c. &c.

"The solutions of sugar used were made with crystallized sugar, and a little tartrate of ammonia and ashes of yeast were added to furnish the nitrogen and salts required for the growth of fungi."

The experimenters also took every precaution to obtain the diseased products without contact of the exterior air. With fluids this was comparatively easy by means of "vacuum tubes." These were formed and used as follows:—

"Take a glass tube three-sixteenths of an inch or so in diameter, seal one end by the flame of a lamp, and, at a point about three inches from the sealed end, draw it out to a slender tube.

"The tube is then held nearly upright in the flame of a Bunsen burner until the whole of the sealed end up to the narrow neck is red hot. The part in the flame is held with pincers, the other end in the fingers, and when the requisite heat is obtained the slender neck is rapidly drawn to a point and sealed. We now have a pointed, hermetically sealed tube, in which there is a partial vacuum, and in which by the red heat all organic matters have been destroyed.

"This we call a 'vacuum-tube.'

"Suppose, now, that we want some blood for experiment. As soon as possible after the death of the animal, lay bare the jugular vein, prick it with a lancet, introduce the pointed end of the tube and break it off within the vein, pressure being at the same time made upon the vessel from above and below towards the opening, by the fingers of an assistant. The blood will rush into the tube, and if it has been properly made, will fill it for three-fourths of its length. Then, holding a lighted spirit lamp or candle close to the vein, withdraw the point of the tube directly from the vessel into the flame, and hold it there until sealed.

"If the operation has been properly performed, and the blood be healthy, it will coagulate and then remain unchanged for an indefinite period.

"Exudates in the pleural or peritoneal cavities, bile, urine, &c., are obtained and preserved in the same way."

With the solids of the body it is simply impossible to prevent the access of impurities from without, and indeed, as the doctors remark, "even with the more manageable blood it is impossible to be absolutely certain when we see its surface covered with mould that the possibly single spore from which that forest sprang must infallibly have been in the vein of the animal whence the blood was drawn."

For these reasons Drs. B. and C. resorted to the method of comparison, and herein seems to us to lay one of the great values of their paper.

The experiments themselves were in two series: 1st. Those made on cattle suffering with contagious pleuro-pneumonia. 2d. Those made with material obtained from animals affected with the so-called Splenic or Texan fever.

Of the first series there were seven experiments, all confirming and corroborating one another. We select the following as examples:—

"On the 26th of February, 1869, a cow in the last stages of pleuro-pneumonia was killed near Washington, and vacuum tubes filled from the jugular vein. Tubes were also filled with the serum contained in bullæ formed by the false membrane lining the bronchial tubes.

"About four inches of each jugular vein were removed, ligatures having been first applied. Eighteen hours afterwards the blood in the veins from which the tubes had been filled was carefully examined with a power of seven hundred and fifty diameters. It was coagulated, and the serum contained some molecules, single or in chains of two or three, which were motionless. Blood from one of the vacuum tubes contained no such bodies. The lung serum contained molecules like those in the vein.

"*Experiment* 6, February 26, 1869.—In a culture apparatus were placed three watch-glasses and two growing slides, arranged as follows: The growing slides and watch-glass No. 1 contained boiled potato and diseased blood; watch-glass No. 2 contained boiled potato and healthy blood; watch-glass No. 3 contained boiled potato and lung fluid. Twenty-four hours later in the growing slides the red corpuscles had nearly disappeared; bacteria and monads, single or in short chains, were seen; a few moving, but the greater part at rest. Seven days later there was no change; motionless bacteria and monads were present in all the glasses, but no trace of mycelium or spores.

"*Experiment* 7, February 26, 1869.—Seven watch-glasses and five growing slides were arranged as follows: Watch-glass No. 1 contained potato boiled in distilled water; watch-glass No. 2 contained lemon boiled in distilled water; watch-glass No. 3 contained lemon boiled with diseased blood; watch-glass No. 4 contained diseased blood alone; watch-glass No. 5 contained healthy blood alone; watch-glass No. 6 contained boiled potato with diseased blood; watch-glass No. 7 contained boiled potato with healthy blood; growing slide A contained boiled lemon with diseased blood; growing slide B contained boiled lemon with healthy blood; growing slide C contained boiled potato with diseased blood; growing slide D contained boiled potato with healthy blood; growing slide E contained boiled potato alone. These were placed in four sets of culture apparatus, and kept at a temperature of 78° Fahrenheit. In twenty-four hours a few small cells were seen in the slide B, which rapidly developed into ordinary yeast, continuing to bud and increase for four days. The fluid in watch-glasses 4 and 5 rapidly putrefied, and was filled with bacteria and monads. In watch-glasses 1 and 2 and growing slide E no change had occurred in eight days. In the others a few motionless bacteria appeared on the second day, after which there was no change. The precautions taken in this experiment to exclude extraneous bodies were great, embracing every point which could be thought of as liable to lead to error. In April one of the tubes containing lung serum from this cow was given to Mr. Reid, residing near Washington, and with its contents he successfully inoculated several cattle, producing in each case the same effects, and, judging by the after results, conferring the same immunity against the disease as if perfectly fresh virus had been used. The jugu-

lar vein from this cow, which had not been opened, was suspended in a glass jar, closed with a cork dipped in paraffine. This was kept at the ordinary temperature of the room and in diffuse daylight.

"June 3, 1869, the jar was opened and the contents examined. The serum had drained from the vein and collected in the bottom of the jar, was of an offensive odor, and contained bacteria, moving and at rest. No trace of mould on the outside of the vein. The contents of the vein showed no bacteria or molecular forms.

"The contents of the vein and the serum which had drained from it were cultivated upon various substrata and in the several forms of apparatus, with the usual results, viz., luxuriant development of cryptococcus and penicillum.

"On the 3d of June, 1869, three months after it had been put up, one of the vacuum tubes of blood from this animal was opened, and the contents carefully examined; they could not be distinguished from freshly coagulated blood; the corpuscles were perfectly normal, and there was no trace of bacteria or micrococcus.

"The blood was cultivated on growing slides and in the beaker isolation apparatus—in one case with negative results, in others with the productions of the usual penicillum forms. Healthy blood kept for the same time and treated in the same way gave the same results.

"Other experiments were made with the pleuro-pneumonic fluid by cultivating them with solutions of cane and grape sugar, which will be referred to subsequently.

"The general conclusion from all the observations and experiments we have made is, that in the contagious pleuro-pneumonia of cattle there is no peculiar fungus germ present in the blood or secretions, and that the theory of its cryptogamic origin is untenable."

Of the second series of experiments, we select the following:—

"On the 29th of May vacuum tubes of blood and secretions from two yearling steers, killed at Houston, Texas, May 18, 1869, were received and examined. These animals presented the usual lesions—enlarged spleens, erosions of the stomach, &c.

"The blood from these tubes was in an advanced stage of putrefaction, and filled with bacteria and micrococcus.

"The bile from the four-year-old steers was normal in appearance; that from the one-year-old animals was very dark and tenacious. Micrococcus was found in each, but not abundant. In each there were found moving rods (bacteria?), which were somewhat peculiar, one end being bent, forming a little knob or hook. They were of an orange color, probably owing to imbibition of biliary colouring matter.

"The urine in each set of tubes was found to contain micrococcus, bacteria, and cryptococcus.

"*Experiment* 1. Blood from the first series of tubes was placed in a De Bary's growing slide, on blotting-paper, in a beaker isolation apparatus, and in a watch-glass under a culture apparatus, with a few drops of freshly-boiled solution of sugar. In the growing slide cryptococcus forms were observed in thirty-six hours; in twelve hours more, delicate mycelium filaments appeared, and on the fourth day the usual fructification of penicillum crustaceum was seen in the air space in the slide. The isolation apparatus was opened on the fifth day, and penicillum found on the blotting-paper. In the watch-glass cryptococcus was developed on the second day; two days later this was very abundant, and of various sizes and forms, including *C. guttulatus* of Ch. Robin.

"Four days later mycelial filaments, with dilatations of various forms and sizes (*Schizosporangia* of Hallier), covered the surface of the blood. One month later careful examination showed nothing but penicillum.

"*Experiment* 2. The precautions taken in this case were very great, and were as follows: The beakers, culture apparatus, watch-glasses, slides, blotting-paper, and thread were treated with dilute nitric acid, then with liquor potassæ, and finally rinsed with hot, freshly-distilled water. The knife, glass rod, and file used were cleansed in hot alcohol just before being used. The vacuum

tubes were cleansed with liquor potassæ and alcohol just before being opened. The sheet-rubber was thoroughly washed with the same fluids.

"To prepare the beaker isolation apparatus, after the articles used had been treated as above, the cover with blotting-paper was placed on the beaker strong alcohol having been first poured in, and then it was thoroughly shaken. The alcohol was then removed by similar treatment with freshly-distilled water. The apparatus was then taken to a room in which no experiments had been made, and the fluids added to the blotting-paper. During this operation the interior of the apparatus was exposed for about one minute.

"Blood from four-year-old steer (first set of vacuum tubes) was placed in a De Bary's growing slide, in a watch-glass with pulp of lemon, same with pulp of orange; also in beaker isolation apparatus on lemon and orange.

"Blood from one-year-old steer (second set of vacuum tubes) was arranged in the same manner.

"And lastly, a similar series of apparatus was arranged with lemon and orange without blood.

"The growing slides and watch-glasses were examined daily, with powers ranging from two hundred to one thousand diameters.

"At the end of five days the isolation beakers were opened. The phenomena in all, with one exception, were the same. Penicillum crustaceum (Fr.) was developed in all, more slowly and less luxuriantly where no blood had been added. The exception referred to above was in the watch-glass to which the putrescent blood from the one-year-old steer was added; in this there was a luxuriant growth of mucor racemosus (Fres.), and also coremium, a luxuriant and fasciculated form of penicillum.

"It is considered needless to give the details of all the culture experiments undertaken with this blood; suffice it to say that it was placed on various substrata and compared with healthy blood, and the results were in all cases the same: *i. e.*, production of penicillum, coremium, and mucor.

"In cultures undertaken with the urine, either no result was obtained or the usual penicillum made its appearance.

"Culture of the bile upon lemon gave the same results, but the penicillum growth was much less than when the blood was used. Disk-like masses of mycelium (the *Sclerotia* of Hallier), usually bright yellow in colour, were produced alike with diseased and healthy blood.

"To judge, therefore, from the specimens that we have had the opportunity of examining, it would appear that in the blood, bile, and urine of cattle slaughtered in Texas, apparently healthy while alive, but presenting after death the appearances considered characteristic of the splenic fever, there are present minute bodies corresponding to the micrococcus of Hallier, which exhibit the same behaviour with reagents as the spores of fungi.

"In the bile and urine bacteria and cryptococcus cells also occur. The micrococcus granules, however, have no specific characteristics, and cannot be distinguished from similar bodies which are to be seen in any blood in an incipient stage of putrefaction. Thus, on the 4th of June, vacuum tubes were filled with blood from a healthy sheep slaughtered near Washington, and this blood, examined sixty hours afterwards, contained in equal abundance these same bodies (micrococcus) that were found in the blood of the Texas cattle. The attempt to give these micrococcus molecules a special and important character by the 'cultivation' in various ways of the blood containing them, also failed. In all cases the fungous growth that appeared upon the cultivated material was composed of the commonest moulds, and, instead of being unique as to species or even genus, comprised various forms and sizes of cryptococcus, torula, penicillum, coremium, mucor, and the so-called schizosporangia of Hallier, of all forms and sizes; these various fungi being either simultaneously or successively developed. Moreover, all these varieties of fungi can be also developed by a similar cultivation of healthy blood, though not as rapidly nor in as great luxuriance.

"The fact that in our cultivations we never obtained any growths of ustilago, coniothecium, or tilletia, which were so frequently produced in Hallier's experi-

ments, is probably due to the circumstance that no specimens of those fungi were ever brought into the room where our experiments were conducted.

"In cases of splenic fever of cattle our experiments, therefore, fail to establish the presence of any peculiar or special cryptogamic germs in the blood; and, instead of supporting the notion that the micrococcus granules which are present in any way cause the disease, tend rather to show that their occurrence should be considered as an effect of the malady, whether constant or inherent, or altogether fortuitous; for since these granules, if fungous in their nature, must be, as indicated by the cultivations, forms of the very commonest moulds, it is certainly a much more probable hypothesis that the disease so destroys the vitality of a part of the blood as to render it capable of supporting and nourishing a low form of these ubiquitous fungi, which perish when introduced into a healthy subject, than it is to imagine a deadly disease, occurring only under certain rigidly prescribed conditions, as caused by the presence, in the economy of the germs, of fungi notoriously harmless and of universal occurrence."

Drs. B. and C. then detail some experiments made to determine whether bacteria are fungoid or not; whether they are a sort of first stage of the yeast plant.

The method of experimentation was as follows: the experiments themselves want of space forces us to omit.

"Our aim was to develop in a saccharine solution an unmistakable yeast cell with its attendant special form of fermentation, from a vibrio or bacterium contained in a putrefying fluid; and the practical problem was to devise some means whereby the putrid fluid might be added to the sugar solution, without at the same time any yeast cells, which it might accidentally contain, also passing into the solution, and so vitiating the result. To accomplish this end we availed ourselves of the different behaviour of yeast cells on the one hand, and the various cryptogamic organisms of putrid fluids on the other, in respect to their ability to pass through certain tissues. Now, bacteria, vibrios, and molecules, either single or in chains (*Monas, Microzymas, Micrococcus, Leptothrix, Zooglea and Schizomycetes*, of various authors), will readily pass through thoroughly moistened filtering paper; while, as originally shown by Mitzscherlich (*Pogg. Annal.*, 1855, p. 224), and again proven by the following experiments, yeast cells will not. Furthermore, none of the above-mentioned bodies will pass through vegetable parchment, although fluids will. If, then, upon adding a putrefying fluid to a saccharine solution, through the intervention of filtering paper, we produce yeast and fermentation in that solution, while upon making the addition through vegetable parchment we produce none, the method of the experiment leaves no doubt that the yeast must have been developed from cryptogamic germs other than yeast contained in the putrid matter. To carry out this plan of experiment, the following apparatus was used.

"In a four or six-ounce glass beaker (not lipped) was placed a tube, made by cutting off the bottom of a common test tube, three-fourths inch in diameter, and as high as the beaker. This tube was open at the top, but closed at the bottom by two layers of fine, strong filtering paper tied tightly over the flaring end with waxed string, and rested on a fragment of glass rod placed in the beaker; all these articles having been carefully washed, were put together as described, and about two ounces of hot strong alcohol were poured into both the tube and beaker. A piece of thin sheet rubber was next tied over the top, hermetically closing both beaker and tube, and the whole apparatus, having been thoroughly shaken, so that the hot liquid should come fully in contact with every part, was then set aside to cool until wanted.

"The solution to be experimented on, which had been boiled, filtered, and then reboiled in a flask fitted up as an isolation apparatus, was in the mean time cooling in that vessel. When this had cooled to about 85°, the alcohol was removed from the apparatus, and the tube was rinsed with a little freshly-distilled water. Then from one to two ounces of the solution to be experimented on was placed in the beaker, while a little of the putrefying or fermenting fluid was put in the inner tube. The sheet-rubber was finally stretched tightly over all and tied as before, and the apparatus was then kept at a temperature of 75° Fahrenheit to 85° Fahrenheit in diffused daylight.

"The solutions used were of cane or grape sugar, mixed with extract of beef, or with tartrate of ammonia and ashes of yeast.

"The two following formulæ gave the best results:—

A.

"Cane sugar	10 parts.
Tourtelot's extract of beef	10 "
Water	100 "

B.

"Cane sugar	10 parts.
Tartrate of ammonia	5 "
Ashes of yeast	5 "
Water	80 " "

The results in the majority of the experiments favoured the view that some of the bacteria and micrococcus germs were capable of developing into the yeast plant.

Commenting on these, the authors speak as follows:—

"If the above expressed view of the nature of these bodies be accepted as probable, the results of the culture experiments with the fluids of diseased and healthy animals can be readily understood. In many animals, whether healthy or diseased, there are no fungus germs in the blood. We have kept vacuum tubes of blood for four months, and at the end of that time the contents were perfectly normal. In other animals there are probably germs in the blood during life, as shown by the fact that, in vacuum tubes filled from them, the blood putrefied and the usual mycoderms developed. But that these germs can develop and multiply, without dead organic material as a pabulum, is very doubtful.

"The fungi, which are developed from blood containing these germs, are, as might be expected, the common moulds, the spores of which are almost ubiquitous. Most frequently penicillum, next mucor, next aspergillus."

In conclusion, we think this paper totally refutes all that Hallier has written, and proves that his culture experiments afford no proof of the fungal theory of contagious diseases. He is but another added to the number of those who have been allured onwards by the glowing beauties of the theory to the waste of time and labour. Those who are desirous of obtaining *permanent* reputation will do well, we conceive, to avoid the subject; especially would we offer this caution to novices in cryptogamic botany. H. C. W., JR.

ART. XXXIV.—*The Pathology and Treatment of Stricture of the Urethra and Urinary Fistulæ.* By Sir HENRY THOMPSON, F.R.C.S., etc. Third Edition. 8vo. pp. xvi., 336. London: John Churchill and Sons, 1869.

THE first edition of this classical work appeared in 1854, having been honoured by the reception of the Jacksonian prize of the Royal College of Surgeons of England, two years previously. An elaborate and excellent review of that edition was published in the number of this Journal for July, 1855 (pp. 87–105), the reviewer justly characterizing the work as a "beacon-light" in the special department of surgical pathology with which it dealt.

A second and much enlarged edition made its appearance in 1858, and was noticed in the number of this Journal for January of the ensuing year (pp. 201–203). In preparing the present (third) edition, Sir Henry Thompson has departed from the usual routine which makes each issue more bulky and more costly than its predecessor, and has diminished the size of his volume by upwards of eighty pages. This reduction of bulk has been effected "by removing matter which in the former edition related to controversial points under discussion at the time of publication, but since, for the most part, settled, and

therefore no longer necessary to be reconsidered in detail," and by the omission of all the illustrative cases which were perhaps necessary in support of propositions advanced by the writer, in the earlier part of his career, when he was less known and less entitled to speak *ex cathedrâ* than at present. In this course we think the author is right: he is now so generally recognized as the highest living authority on the subjects concerning which he writes, that the mere fact that a certain opinion is held by Sir Henry Thompson, on these topics, is of more importance and will carry more weight than an argument derived from any individual series of cases, which after all may perhaps be susceptible of being read in more than one way, and which under any circumstances might probably be counterbalanced with an equally long series collected with a view of proving an opposite doctrine.

The author's views upon the subjects discussed in this volume are so familiar to our readers, from the notices of previous editions which have appeared in our pages, and from a more recent notice of his "Clinical Lectures," in our number for last April (pp. 509–511), that it would not be worth while for us to enter into any detailed examination of the present volume. Suffice it to say, that it is a most learned as well as most practical and trustworthy treatise upon the subjects with which it deals. We have read it through with great care, and with constantly increasing interest and admiration. We are particularly glad to be able to say that the criticism which we felt compelled to make as to the tone of the "Clinical Lectures," is in no wise applicable to the volume now under consideration. While bearing on its every page the evidences of profound research and wide reading, as well as of large practical experience, it is both in its conception and in its execution, characterized by that dignity and true modesty which, while eminently befitting the writer who is conscious of his own power, and who possesses real independence of judgment, is but too often slighted by both tyro and teacher, under the mistaken notion that flippancy shows originality and freshness, and that contempt for others will insure attention and respect for self.

This edition is neatly and very accurately printed, and accompanied by three plates (the frontispiece of former editions is omitted), and forty-seven woodcuts. We are glad to know that it is to be republished in this country, and trust that it may be widely distributed among the surgical practitioners of America.

J. A., JR.

ART. XXXV.—*On the Action, Use, and Value of Oxygen in the Treatment of Various Diseases otherwise Incurable or very Intractable.* By S. B. BIRCH, M. D., London; formerly Demonstrator of Anatomy Medical School, Manchester, &c. Second Edition. 8vo. pp. 149. London: John Churchill and Sons, 1868.

THIS book is not large, but it is too large. Our comment is friendly, and proceeds from a desire to see every new remedy and therapeutic method laid before the profession with conciseness and precision. It is not otherwise possible to understand clearly the value of any treatment so far as ascertained, or to determine what is undecided, by accurate additional investigation. We might justly expect in a volume with the title of this, first, what is known of the general chemical properties of oxygen in its ordinary atmospheric form and in its several allotropic conditions; secondly, an account of its effects upon the various functions under physiological circumstances and different modes of administration; then an equally definite record of the special results observed after its employment in diseased conditions; and lastly, a statement of the indications and contra-indications for its use.

The author does, indeed, treat of these several divisions of the subject, but confuses them by an involved and needless discussion of the intimate *modus operandi*. Instead of systematic reports of the effects produced upon respiration, circulation, and other cardinal functions, we have an intricate dissertation

upon atomic polarity, motility, and modified force. The importance of being guided by the "constitutional predisposition, and the abnormal conditions incidentally existing in the organism of each patient" is repeatedly referred to, but we are left in doubt as to the special circumstances so grouped.

The clinical illustrations are thirty-one in number, and consist of chronic cases, widely different in character, in which other remedial treatment had failed. They are reported in general terms, and do not, therefore, admit of accurate analysis. The beneficial effects obtained can apparently be referred in all to improvement in the general nutrition, and in this we judge the real value of the remedy consists; acting probably through its influence upon the blood and circulation. Dr. Birch says, "The diseases *par excellence* in which the gas has afforded me the most gratification, are those attended with either local or general venous congestion—a preponderance of the venous over the arterial, and torpidity of the capillary circulation. The good effects have been, as a rule, most decided in persons of a gouty or strumous habit, or otherwise in a state of general *malaise*, with great liability to colds and sluggish circulation, either constitutional or superinduced by an atomic and oppressed condition through over-feeding and other luxurious or indolent habits." The author maintains with much earnestness that the effects obtained cannot be referred to mere super-oxygenation; nor are they to be explained by the quantity, but by the modified condition of the gas administered. To insure its requisite energy as a therapeutic agent the oxygen should "be either nascent or carefully subjected to the electrical current immediately before employment, or properly condensed, so as to be available for release, measurement, and administration, at a moment's notice." "Nine to twelve pints of the pure gas, diluted with about seventy-five pints of air, may be stated as a fair medium dose; and the inhalation of this quantity should, *mutatis mutandis*, extend over a period of at least half an hour." For administration by the stomach, Dr. Birch prefers super-oxygenated water, ozonified water and oil, and oxygenated bread, to peroxide of hydrogen; but he fails to give us distinct advice as to the cases in which these are better than inhalations.

The author complains at length that his labours have been, with a few gratefully enumerated exceptions, ungenerously met by indifference, prejudice, and contempt; and a really valuable remedy unjustly classed with pseudo-scientific pretensions and bread-pills. We do not wish to enter into the details of the controversy, and cannot here make any extended reference to the reports of Richardson, Pavy, and others who have used oxygen in different forms and in different diseases. We certainly believe that its modified administration is something more "than taking a little extra fresh air," and in view of the results already obtained and the continued investigations of chemists upon allotropic conditions of the gas, and upon the highly oxygenated compounds, we encourage Dr. Birch to pursue his work. We cannot doubt that a more scientific statement of what he has thus far accomplished, and a carefully digested account of subsequent observations, will secure for him the unprejudiced and eager attention of all who are fond of new methods of treatment, and particularly of those who have to do with "diseases otherwise incurable or very intractable."

E. R.

ART. XXXVI. *Reports of Thirteen Hospitals for the Insane.*

1. Dr. HARLOW, in the report of the *Maine Insane Hospital*, for the year ending with Nov. 20, 1868, recommends the erection of an additional wing for the accommodation of men.

	Men.	Women.	Total.
Patients in course of the year . . .	234	234	468
Discharged cured	38	25	63
Died	11	16	27

Deaths from general paralysis, 6; phthisis, 5; exhaustive mania, 4; chronic insanity, 2; apoplexy, 2; suicide, 2: disease of heart, marasmus, dropsy, epilepsy, old age, and violence by another inmate, 1 each.

"The unfortunate homicide which occurred in February, was as unexpected as it was sudden. No symptom of the kind had ever exhibited itself in the patient prior to the act itself; hence no one of the friends, or any one in the institution could have anticipated such a demonstration of violence. It seemed to be a sudden development in the progress of the disease."

2. The statistics of the *Vermont Asylum for the Insane*, for the year ending with the close of July, 1868, are as follows:—

	Men.	Women.	Total.
Patients in course of the year . . .	339	307	646
Discharged cured			46
Died			42

"To promote their self-respect," says Dr. Rockwell, "the patients are brought forward in their classification, as fast as their condition will allow, and are never returned until, after trial, they have shown that they cannot control their feelings so as to retain their places."

3. The report of the *Boston Lunatic Hospital* for the official year 1867–68, furnishes the following information:—

Number of patients in course of the year	252
Discharged recovered	25
Died	25

Died of general paralysis, 8; exhaustion of chronic insanity, 5; "puerperal disease," 3; apoplexy, 2; hemiplegia, 2; inflammation of brain, congestion of lungs, epilepsy, and dysentery, 1 each.

"The number of deaths from general paralysis," remarks Dr. Walker, "seems large, but there were ten cases admitted and fourteen under treatment during the year. This fearful form of brain disease appears to be rapidly increasing in the community, and may well claim the earnest attention of the medical profession, and of thinking men."

4. The general results at the *Taunton Lunatic Hospital* (Mass.) for the fiscal year ending Sept. 30, 1868, are as follows:—

	Men.	Women.	Total.
Whole number of patients	312	337	649
Discharged cured	49	52	101
Died	25	13	38

Died of phthisis, 7; maniacal exhaustion, 5; general paralysis, 5; diarrhœa, 5; old age, 3; suicide, 3; marasmus, 2; apoplexy, 2; paralysis, 2; inanition, 2; disease of heart, 1; gangrene, 1.

Dr. Choate gives the following reasons for the superiority of hospital treatment over treatment at home: "The convenience of hospital arrangements and appliances for securing safety, comfort, and control, without the irritating and forcible restraint required in a private house; the skill which experience of necessity gives hospital officers and employees; the change, the enforced regularity of life, the easier application of remedies, and, though last not least, the excellent moral effect of breaking up old associations, and the renewed self-control which spontaneously springs from constant contact with strangers."

"The new theory which has of late gained some foothold in the minds of the public, and which has enlisted in its favor a few prominent and influential names —that a considerable portion of the inmates of insane hospitals could be better boarded in private families, is so entirely antagonistic to the views always urged in these reports, that no further answer need be attempted than a reference to the reasons briefly condensed above, why hospital care and treatment are desirable. The matter may safely be left to the practical judgment of the com-

munity, who by this time ought to be pretty fully informed as to the advantages and the evils of our present system. The well-known and often-quoted truth, that reforms never go backward, though subject like all other human affairs to occasional reflex action, will undoubtedly be verified in the history of insanity."

5. The subjoined numbers exhibit the general results at the *McLean Asylum* during the year 1868 :—

	Men.	Women.	Total.
Whole number of patients	126	144	270
Discharged cured	16	18	34
Died	12	11	23

The larger part of Dr. TYLER'S report is devoted to a history of the hospital, the semi-centennial anniversary of the opening of which occurred in October, 1868. "The simple statement," says he, "of results accomplished by the asylum in the half-century of its existence, has an eloquence of its own. Five thousand four hundred and fifty-seven persons have been admitted, and five thousand two hundred and eighty-one have been discharged. Of the latter, two thousand five hundred recovered; two thousand and thirty-four were in the various conditions registered as much improved, improved, and not improved. Seven hundred and forty-seven have died."

6. The principal statistics of the *Northampton Lunatic Hospital* (Mass.), for the official year closing with the close of September, 1868, are as follows :—

	Men.	Women.	Total.
Whole number of patients	243	322	565
Discharged cured	19	17	36
Died	25	18	43

Deaths from phthisis, 15 ; marasmus, 12 ; epilepsy, 6 ; paralysis, 3 ; erysipelas, dysentery, apoplexy, exhaustion, abscess, suicide, and dropsy, 1 each. A very large proportion of the patients of this hospital are incurables, many of them received from the other hospitals in the State. The average number of persons residing in the hospital, who attended services in the chapel on the 52 Sabbaths of the year, was 314. The average number of *patients* who attended was 283, which was more than 68 per cent. of the average number in the house. There were twelve Sabbaths upon which the proportion of patients at chapel was over 70 to each 100 in the house. On one of them it was 74, and on two of them 76.

"No honest, true, and faithful minister to a mind diseased," says Dr. EARLE, "will ever yield assent to the delusive ideas and notions of his patients. Much less will he openly express his belief that they are true, and treat his patients as if they were so. He who, having charge of an insane man, asserting himself to be Julius Cæsar, Napoleon, or any other military hero, accords pretended belief of that assertion, addresses his patient by the assumed name or title, and, last and worst, decorates him, or permits him to be decorated with military garments, is false to the principles and objects of his calling. He is confirming the insanity of his patient, not curing or ameliorating it. And what is true in this more strikingly illustrative case, is true as applied to delusion in all its manifold forms and phases."

7. In the report of the *Butler Hospital for the Insane*, for the year 1868, Dr. SAWYER, in allusion to interviews between patients and their friends, says : "There are often patients dangerously ill, to whom it is a duty to summon their friends. But there are very many cases of recent illness in which such visits but stimulate and excite the diminishing morbid action, and rekindle the smouldering fires of disease. In these last cases my rule has been to refuse positively any communication with the patients except to the nearest relatives or friends, and to state to those as plainly as possible, the probable consequences, leaving to them the choice whether to gratify their own desires at the risk of irreparable

injury to the patients, or not. I am sorry to say that, in several instances during the year, visits made in spite of my earnest remonstrances, have resulted disastrously to the mental health of the patient."

	Men.	Women.	Total.
Patients in the course of the year . .	108	103	211
Discharged cured			26
Died			8

Deaths from chronic mania, 4; paralysis, 2; acute mania, 1; and meningitis, 1.

8. The report of the *Retreat for the Insane*, at Hartford, Conn., for the fiscal year ending with the close of March, 1868, is unusually brief.

	Men.	Women.	Total.
Patients in the course of the year . .	189	224	413
Discharged cured	30	42	72
Died	6	11	17

"As was anticipated in our last report," says Dr. BUTLER, "the removal of the State beneficiaries (to the hospital at Middletown) will now give the directors of the Retreat the opportunity they have so long desired of remodelling and improving the institution. The operations of the Retreat will then revert to the original object of its founders—the providing amply for all classes of the insane—spacious and handsome accommodations for those whose tastes, habits, and ability require them, with liberal arrangements for the indigent, especially for that class who, having seen better days, retain amid their pecuniary reverses their full appreciation of the refinements, and of that larger measure of the comforts, not to say luxuries, of life, which have been associated with those refinements."

9. The *Bloomingdale Asylum for the Insane*, as appears by the report for 1868, is yielding to the aggressions of the growing city of New York. A farm of 300 acres, at White Plains, has been purchased for the new establishment. In regard to this site, Dr. BROWN says: "It combines advantages which could not, perhaps, have been found conjoined elsewhere. Its easy accessibility, its proximity to the railroad station, and to a large village, its central position with reference to the communities to be accommodated, its copious supply of water, and the reputed healthfulness of the region, its command of a diversity of roads for agreeable excursions, and, finally, its ample extent, which will effectually shut out obnoxious encroachments, besides securing all classes of patients great range for exercise without exposure to public curiosity, all unite to commend it, and to justify the gratulations of those most conversant with the needs and the treatment of the insane."

	Men.	Women.	Total.
Number of patients in 1868 . . .	140	157	297
Discharged cured	22	33	55
Died	10	10	20

Died of phthisis, 3; general paralysis, 2; apoplexy, 1; puerperal mania, 1; epilepsy, 1; pneumonia, 2; chronic dysentery, 1; acute mania, 3; exhaustion of chronic mania and advanced age, 5; suicide by wounds, 1.

10. The leading numerical results at the *King's County Lunatic Asylum* (N. Y.), for the official year ending with the 31st of July, 1868, were as follows:—

	Men.	Women.	Total.
Whole number under treatment . . .	324	442	766
Discharged cured	35	56	91
Died	33	23	56

Deaths from epilepsy, 8; phthisis, 7; exhaustion, 6; general paralysis, 5; anæmia, 5; diarrhœa, 4; pneumonia, 4; pulmonary congestion, 3; paralysis,

2; peritonitis, 2; cerebral congestion, meningitis, apoplexy, puerperal mania, typhomania, purpura hæmorrhagica, abscess, valvular disease of heart, arterial ossification, uræmia, 1 each.

11. At the *State Lunatic Asylum*, Utica, N. Y., the official year ending with the 30th of November, 1868, furnished the subjoined statistics:—

	Men.	Women.	Total.
Number of patients	517	468	985
Discharged cured	80	77	157
Died	33	25	58

Died of exhaustion, 12; general paresis, 10; apoplexy, 8; phthisis, 4; paralysis, 4; disease of heart, 3; softening of brain, 3; suicide, 2; meningitis, 2; epilepsy, 2; anasarca, 2; cerebral abscess, myelitis, hemorrhage from bowels, phlegmonous erysipelas, pulmonary apoplexy, and carcinoma, 1 each.

Dr. E. R. Hunn, of Albany, has been appointed special pathologist to this hospital. "We look forward," says Dr. Gray, "to the period which we hope is not remote, when all cases of insanity will be brought as promptly under the observation and care of the physician as other diseases, and when the medical profession will be as ready and as fully qualified to treat insanity as other nervous and cerebral disorders. Then such cases as should be treated in hospitals will be promptly sent, and the great and prolific source of chronic insanity will be arrested. I have frequently heretofore urged the prompt treatment of all cases of insanity in the earliest stages, and I feel that it cannot be too strongly or too persistently impressed upon the public. Herein lies the secret of making the public burdens for the care of the insane as light as possible. The great expenditures are for the life-long cases, and not for those who are cured."

12. Although very recently enlarged by extensive additions, the *New Jersey State Lunatic Asylum* is already full and crowded on the side for women, and the number of men is within sixteen of the full complement of two hundred and fifty. The number of patients at the close of the official year, Nov. 30, 1868, was 520.

	Men.	Women.	Total.
Patients in course of the year	321	394	715
Discharged cured	28	49	77
Died	23	27	50

"During a few weeks of the past summer," says Dr. Buttolph, "there occurred more than the usual amount of sickness in the house, taking the form in most cases, of mild disorder of the digestive organs, but which assumed the character of a severe form of dysentery, and proved fatal to one patient, and to two highly valued attendants. It probably had an influence, also, to depress the health and strength of that large class of chronic cases with which the institution abounds, and whose lives are often held by a very frail tenure." To the usefulness of the following prescription, we can, from observation, attest. "In some extreme cases of maniacal excitement, attended by great wakefulness, exhausted strength, &c., and in which ordinary anodyne treatment has failed to secure the much needed rest and sleep, a liberal stimulant of warm milk punch, frequently repeated, will overcome all the barriers to repose, and the worn-out sufferer will awaken after several hours of sleep, feeling as if he had been transported to a different world in the interval of his consciousness."

13. The subjoined numbers show the general results for the year 1868, at the *Insane Department of the Philadelphia Hospital.*

	Men.	Women.	Total.
Number of patients treated	400	615	1015
Discharged cured	61	62	123
Died			111

Deaths from phthisis, 20; typhoid fever, 14; dysentery, 9; senile debility, 9; softening of brain, 7; apoplexy, 6; asthenia, 6; epilepsy, 6; paresis, 6; chronic bronchitis, 4; exhaustion of acute mania, 4; tuberculosis, 3; dropsy, 2; gangrene, 2; inanition, 2; typhomania, 2; serous apoplexy, catalepsy, heart disease, heart rupture, mania-à-potu, purpura hæmorrhagica, pneumonia, scurvy, and tertiary syphilis, 1 each.

"Nineteen cases of malignant typhus fever," says Dr. RICHARDSON, "occurred in the latter part of February, due, as was ascertained, to the effluvia emanating from a broken culvert. When the cause was removed, the remaining cases convalesced, and the disease disappeared." P. E.

ART. XXXVII.—*The Intermarriage of Relations.* By NATHAN ALLEN, M. D. 8vo. pp. 56. New York, 1869.

THIS essay presents a very fair exposition of the present state of the question in respect to the influence exerted by the intermarriage of blood relations upon the health and integrity of the organism in the offspring of such intermarriages. Taking all the evidence bearing upon the subject that has thus far been adduced, it is very certain that the verdict must be rendered against the safety of these marriages, so far as concerns the health and well-being of the offspring. At the same time, the irrelevance of much of the evidence made use of to prove the bad effects of the intermarriage of relations, cannot but become apparent to any one who will undertake its careful investigation. There would seem to be some good reason for believing that the simple intermarriage of relations, continued, generation after generation, will exercise finally a deleterious influence upon the offspring, by lowering the energy of the vital forces of the system, and impairing the tone of the intellect. When a marriage takes place between two cousins, both of whom are in good health, and subject to no abnormal or morbific agencies, being the offspring of healthy parents, we assert that there is no danger that either the bodily health or the intellectual development of the immediate issue of such a marriage will be deteriorated. But when in the parties to a marriage, or in either one of them, a hereditary taint, or a strong proclivity to disease exists, then the evil effects of the taint or the predisposition to disease they inherit will, most certainly, be entailed with augmented intensity upon their descendants by the intermarriage of the latter.

It is unnecessary to attempt to account for the ill effects of such marriages by advocating that there is some "*organic* vitiation" in such cases, or that there is something mysterious in the "*blood of kindred.*" All the effects of such unions, however singular and conflicting, can be explained upon altogether more rational and satisfactory grounds. Admitting that there is a greater resemblance, likeness, similarity, in family connections, extending sometimes to almost every organ in the body, than would be found in the same number of families not related, and that when these connections form matrimonial alliances, it must have, according to the laws of hereditary descent, a marked effect upon their offspring; if, in addition to this resemblance, these same parties should both have certain internal organs imperfectly developed, diseased, or predisposed to disease, the resulting evil must be still greater. The nearer the relation, and the more imperfect and diseased the bodies of both parents are, so much the more obvious and extensive will be the injuries inflicted on the offspring. On the other hand, if this resemblance in the two parties to the union is based upon a better balanced and healthier organization, or if even one of the parties be so constituted, the favourable effects will be seen at once in the offspring. And the more perfect and healthy the organization, the better and more naturally all the organs in the system perform their functions; with other conditions favourable, the stronger, healthier, and more numerous will be their progeny. D. F. C.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *On the Influence of Alcohol upon the Temperature of the Body.*—Dr. C. Binz, Professor of the University of Bonn, gives (*The Practitioner*, Sept. 1869) some of the results of experiments undertaken at his instigation, by students who are working in his pharmacological laboratory. In all about forty-nine experiments were made. "In all these cases the temperature of the rectum was alone taken. An experiment made on a man in whom the temperature of the mouth and anus were coincidently taken by the introduction of a thermometer into each, showed that there was no difference between them, and that consequently the place where the temperature was taken was a matter of no importance. The same result was obtained in the case of a rabbit in which one thermometer was introduced *in ano*, and another beneath the skin of the back.

"As a consequence of these investigations, the alcohol question may assume a somewhat different aspect. The introduction of the thermometer into medical practice, to which only the unscientific will object, has taught us that high temperature in the febrile state constitutes one of the most dangerous symptoms in various diseases. Alcohol is thus frequently called upon to act as a preservative of life by its antipyretic properties. It removes the conditions which induce paralysis of the brain and heart; and it should be employed in those cases especially where the thermometer shows that too high a temperature is present. In this respect it approximates to quinia in its action, but at the same time possesses in addition its well-kown stimulating action on the central nervous system and upon the heart. It is self-evident that its value in this respect is not in any way impaired by its antipyretic properties. In most cases, however, it will be found that the depression of the powers of the system is directly dependent upon the temperature of the blood, and passes off when it falls.

"Two circumstances are opposed to the extensive employment of alcohol in acute disease: first, its effect upon the pulse; and secondly, its influence on the tone and diameter of the vessels.

In all our experiments, the number, and it appeared also the strength, of the contractions of the heart rose. Whenever, therefore, such an effect is from any cause to be feared, alcohol is obviously an improper remedy to be employed.

"According to Waller[1] and the remarkable researches of Cohnheim,[2] pus

[1] Philosoph. Mag., vol. xxix.

[2] Ueber Entzündung und Eiterung (On Inflammation and Suppuration): Virchow's Archiv, Bd. xl. pp. 1–80.

originates in the passage of the moderately enlarged white cells through the relaxed walls of the dilated bloodvessels. I have convinced myself by direct observation of the perfect accuracy of the statements of Cohnheim, though they are still contested by some investigators, and have elsewhere, though undoubtedly with another another object in view, furnished a sketch of my own.[1] Alcohol induces dilatation of the capillaries of various regions of the body, but especially of those of the head, with great precision and certainty. And perhaps it may even be said that it causes dilatation of the capillaries throughout the body. If now there be already present a strong tendency to the formation of pus, it may be materially favoured by the administration of alcohol. We may, perhaps, be allowed to attribute the injurious effects which now and again have been observed to follow the employment of alcohol to these actions. Alcohol holds a secondary position as an antipyretic as compared with quinia, because the latter does not possess these disadvantages.[2]

"It remains for us still to consider to what causes we are to attribute the refrigerating influence of alcohol, and there appear to be three possibilities: that it may operate upon the nervous system; that it may act on the means which the system possesses of regulating its temperature by the perspiration; or, lastly, that it may exert its influence directly on the oxidizing processes which take place in the juices. After all that has been said upon the subject, it is the last action which seems to be by far the most probable.[3]

"Further and more extended series of experiments, which have already been commenced, will, we hope, enable this question to be decided."

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2. *Absorption of Nutritive Substances introduced into the Subcutaneous Cellular Tissue.*—MENZEL and PERCO (*Wien. Med. Wochenschr.* 1869, No. 31) injected beneath the skin various kinds of nutritive matters, in a fluid state, with the intent to determine whether they would be absorbed. At first, fatty substances—almond oil, olive oil, train oil, and the like—were injected into the subcutaneous tissue of dogs, beginning with one drachm and increasing gradually to one ounce. Though fatty substances were found to be less readily absorbed than other forms of fluid aliment, yet finally they also were entirely taken up. At the end of, at the furthest, forty-eight hours, no trace of them was discoverable. Milk, the yelk of a fresh egg, and dissolved sugar were more quickly absorbed. The subcutaneous injection of fatty substances in the human subject gave rise to no serious local symptoms, nor to any serious disturbance of the general system.—*Centralblatt. f. d. Med. Wissenschaft.*, June, 1869. D. F. C.

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3. *Some Previously Undescribed Tetanic Symptoms produced by Atropia in Cold-blooded Animals.*—Dr. THOMAS R. FRASER, while making a series of experiments to determine the minimum fatal dose of atropia for frogs, was surprised to find that increased reflex excitability, convulsions, and tetanus occurred, occasionally, at a certain stage in the poisoning. Believing that a careful examination of these symptoms might probably serve to throw some light on the causation of several of the complicated effects of a substance that has long occupied an important position as a therapeutic agent, he made a number of experiments to determine, accurately, the characters of these convulsive effects; to ascertain the dose necessary for their production; to differentiate, as far as possible, the structures on whose affection they depend; and to harmonize these symptoms with analogous effects in warm-blooded animals, and explain their appearance in special circumstances only, in both frogs and mammals.

The following are the principal results of his researches:—

1. Atropia produces in frogs well-marked convulsant and tetanic symptoms,

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[1] Experimentelle Untersuchungen über das Wesen der Chininwirkung (Experimental Inquiry into the Mode of Operation of Quinia). Berlin: A. Hirschwald, 1868.

[2] Pharmacologische Studien über Chinin. Virchow's Archiv, 1869, Bd. xlvi. p. 139.

[3] Cf. G. Harley on the Influence of Physical and Chemical Agents upon the Blood and the Respiratory Gases: Philosophical Trans. 1865, ii. p. 717.

which when present in an extreme degree form a separate stage in the poisoning succeeding that of paralysis.

2. Tetanic symptoms follow the subcutaneous administration of a dose of sulphate or acetate of atropia, equivalent to the $\frac{1}{10000}$th of the weight of the frog, and of doses a little greater and less than this.

3. These symptoms are due to a direct action of atropia on the *medulla oblongata* and *spinalis*.

4. The differences in the paralyzing and convulsant symptoms that occur in frogs and in various mammals may be explained by the greater susceptibility of the former to the action of a paralyzing agent, and by the amount of paralyzing being greater than the amount of spinal-stimulant action in atropia.

5. The different symptoms that are produced by different doses of atropia in animals of the same species may be explained by its paralyzing being greater than its convulsant action.

6. The paralyzing and convulsant actions of atropia can be imitated in both frogs and mammals by a combination of a paralyzing with a convulsant substance.—*Journ. of Anat. and Physiology*, May, 1869.

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4. *Variation in the Amount of Water in Brain in both Sexes, at Different Ages and in Various Diseases.*—A. Weisbach, describes (*Wien. Med. Jahrbuch.* xvi.) the results of researches in elucidation of this subject, based upon the examination of 206 brains. From each brain 6 portions were taken—carefully weighed, and then fully dried by the aid of a hot water bath. The percentage of the loss in weight after drying being assumed as an indication of the amount of water existing normally in the portion of brain examined.

The portions of brain removed for examination were from the *cerebrum*, three; namely, 1, from the medullary matter; 2, from the external gray matter; and 3, from the external convolutions. Three portions were taken from the cerebellum, viz.: 1, from the posterior lobe; and 2, from the pons and medulla oblongata. Of the brains examined, 130 were of the male sex; of whom, 64 were from 20 to 30 years of age; 16, from 30 to 50; 28, from 50 to 70; and 22, from 70 to 94. All parts of the cerebrum and cerebellum gave with increase of age an increased amount of watery contents. In the medullary substance, it is true, as well as in the lesser brain, this increase occurred subsequently to a decrease which was observed between the age of 30 and 40 years. The pons and medulla oblongata were found to contain the largest amount of water in early manhood, from which period to the 70th year it gradually diminished; it then increased, and reached an amount beyond that present at any period of life between 30 and 70, yet not greater than what was present at a still earlier period. In another series of investigations "On the Proportionate Weight of the Brain in the People of Austria," (*Arch. f. Anthrop.* 1866) M. Weisbach has shown that the weight of the brain is continually decreasing from the age of 20 to 90 years; therefore, while the solid portion of the brain is constantly suffering diminution from the 20th year of age onwards, there occurs a contrary movement in respect to the quantity of water contained in it.

The brains of 64 females were examined: 17, of subjects between 20 and 30 years of age; 5, of such as were between 30 and 50 years; 20, of such as were between 50 and 70 years; and 22, of such as were between 70 and 92 years. All parts of the cerebrum exhibited the same amount of water in the elder and younger subjects; nevertheless, the quantity of water in all the brains was not precisely the same at all times in different subjects during the same periods of life. In the cerebellum, the quantity of water was found constantly to diminish up to the age of 60, but after 70, it augmented; so that the brains of females advanced in years were found to contain usually the largest amount of water. When, in the brains of the aged it was found to be decreased, it was chiefly in the medullary matter of the posterior lobes, the pons and medulla oblongata, as in the brains of subjects of 20 years of age; but, at the same time, these portions of brain contained more water than they did in the brains of subjects between 30 and 70 years of age. A comparison of the results thus far detailed in respect to the comparative amount of water contained in the brains of the two sexes, will show that, in general, the brain of the female,

while it is less in weight than that of the male, contains a proportionately less amount of water. The difference relatively to the different portions of the brain is, by no means, at all times the same. The greatest difference was met with in female subjects aged from 40 to 50 years, the least in those of more advanced age.

Of infants, 13 brains were examined; 8, of the new-born—3 males, 5 females; 2 of males, aged between 3 and 4 years; and 2 of females between 4 and 14 years. The examination showed that, taking both sexes together, the brain in new-born infants, which in all its portions is comparatively larger than it is subsequently, contains, also, a large amount of water, especially the medullary portion of the cerebrum. The amount of water gradually diminishes up to the period of puberty, when it would appear to be often the same as it is, usually, at the age of 20.

From the observations of M. W., he concludes that an increase of water takes place in all parts of the brain during attacks of acute diseases, in males under 60 years of age. In the brains of those over 60 years of age, and in females, the increase was only met with in certain portions of the brain, while again in other cases, there was a diminution of water, especially in the cerebrum. For the most part, in the chronic affections, the brain shows a diminution of its watery portion. In typhus fever, and in tuberculosis, the diminution of water in the brain is to the least extent, while in cases of chronic meningitis, and hydrocephalus, the watery condition of the brain is the highest.—*Centralblt. f. d. Med. Wissenschaft.* 1869, March, No. 12. D. F. C.

MATERIA MEDICA, GENERAL THERAPEUTICS AND PHARMACY.

5. *Physiological Action of the Hydrate of Chloral.*—Dr. B. W. RICHARDSON made an extremely interesting report on this subject to the Biological section of the British Association for the advancement of Science, at its recent meeting, from which we make the following extract: The hydrate of chloral, for the introduction of which into medical practice we are indebted to Liebreich (known for his researches on protagon), "is a white crystalline body, soluble in water, and yielding a solution not very disagreeable to the taste. It is made by the addition of water to the substance chloral. Chloral, the composition of which is C_2HCl_3O, is the final product of the action of dry chlorine on ethylic alcohol. It is an oily fluid, thin, colourless, volatile. The specific gravity is 1.502 at 64° Fahr., and it boils at 202° Fahr. It has a vapour density of 73, taking hydrogen as unity. The odour is pungent. When chloral is treated with a little water, heat is evolved, and small stellate white crystals are formed as the fluid solidifies. The solid substance is the hydrate of chloral, $C_2HCl_3 OH_2O$. The hydrate is slowly volatilized if it be exposed to the air, and the odour of it, were it not pungent, is so like melon as to be hardly distinguishable from melon. When heat is applied to the hydrate it distills over without undergoing decomposition.

"When to a watery solution of hydrate of chloral caustic soda or potassa is added, the hydrate is decomposed, chloroform ($CHCl_3$) is set free, and a formate of sodium or potassium, according to the alkali used, is formed. It was on a knowledge of this decomposition by an alkali that Liebreich was led to test the action of the substance physiologically. He conceived the idea that in the living blood the same change could be effected, and that the chloroform would be liberated so slowly that anæsthesia of a prolonged kind would result. To try this he subjected animals to the action of chloral, and even man, and proved that sleep could be rapidly induced without the second stage of excitement common to the action of chloroform when it is given by inhalation. Liebreich produced in a rabbit, by a dose of 0.5 gramme of the hydrate of chloral, a sleep which lasted nine hours. This dose was equivalent to 0.35 of chloral, and to

0.29 of chloroform. The symptoms, he found, were like those produced by chloroform. In some cases he gave the hydrate to the human subject. The first case was that of a lunatic, to whom he administered 1.35 gramme. No irritation was set up, and five hours of sleep was obtained. In a second case he gave internally a dose of 3.5 grammes to a man suffering from melancholia, by which he produced a sleep of sixteen hours.

"Such," said Dr. Richardson, "was an epitome of the facts placed before him at the time when he commenced to make his experiments. In setting out on his own account, he first prepared a standard solution of the hydrate. He found that 30 grains dissolved in 40 grains of water, and formed a saturated solution, the whole making up exactly the fluidrachm. The standard solution prepared in this way was very convenient.

"He next proceeded to inquire whether, by the addition of the hydrate to fresh blood, chloroform was liberated. This was proved to be the fact; the odour of chloroform was very distinct from the blood, and chloroform was itself distilled over from the blood, and condensed by cold into a receiver.

"The narcotic power of the hydrate was then tried on pigeons, rabbits, and frogs. The standard solution named above was employed, and was administered either by the mouth or by hypodermic injection. The action was equally effective by both methods. The general results were confirmatory of Liebreich's own experience to a very considerable extent. They are as follows: In pigeons, weighing from 8½ to 11 ounces, narcotism was produced readily by the administration of from 1½ to 2½ grains of the hydrate. In these animals the dose of 2½ grains was the extreme that could be borne with safety, and a dose of 1½ grain was sufficient to produce sleep and insensibility. The full dose of 2½ grains produced drowsiness in a few minutes, and deep sleep with entire insensibility in twenty minutes. Before going to sleep there was in every case, whether the dose were large or small, vomiting. As the sleep and the insensibility came on, there was in every instance a fall of animal temperature, and even in cases where recovery followed, this decrease was often to the extent of five degrees. The respirations also fell in proportion, declining in one case from 34 to 19 in the minute during the stage of insensibility. From the full dose that could be borne by the pigeon the sleep which followed lasted from three and a half to four hours. Six hours at least was required for perfect recovery. During the first stages of narcotism in pigeons the evolution of chloroform by the breath was most distinctly marked.

"In rabbits weighing from 83 to 88 ounces, thirty grains of the hydrate were required in order to produce deep sleep and insensibility. A smaller dose caused drowsiness and want of power in the hinder extremities, but no distinct insensibility.

"When the full effect is produced in rabbits from the administration of the large dose, the drowsiness comes on in a few minutes: it is followed by want of power in the hinder limbs, and in fifteen minutes by deep sleep and complete insensibility. The pupil dilates, and becomes irregular; the respiration falls (in one case from 60 to 39 in the minute), and the temperature declines 6° Fahr.; sensibility returns with the rise in number of respiratory movements, but in some cases falls again during the process of recovery. The drowsiness, or, if the animal is left alone, what may be called sleep, lasts from five and a half to six hours. But it was observed that the period of actual anæsthesia was very short, lasting not longer than half an hour, after which the skin seemed rather more than naturally sensitive to touch. During recovery there are tremors of muscles almost like the rigors from cold; they are due probably to great failure of animal temperature.

"In frogs a grain of the hydrate causes almost instant insensibility, coma, and death.

"In further prosecution of his research, the author tested, on similar subjects, the effect of chloroform, bichloride of methylene, tetrachloride of carbon, and chloride of amyl. In all the observations with these substances, the narcotizing agent was used by hypodermic injection. It was found, as a result of these inquiries, that seven grains of chloroform, five of tetrachloride of carbon, and seven of chloride of amyl, produced the same physiological effect as two grains

of the hydrate. Seven grains of bichloride of methylene induced a shorter insensibility. A rabbit subjected to thirty grains of chloroform slept four hours and twenty-five minutes; and a pigeon subjected to seven grains slept three hours and twenty-five minutes. All these agents caused vomiting in birds, before the insensibility was pronounced, the same as did the hydrate; but in no animal was there any sign of the stage of excitement which is seen when the same agents are administered by inhalation. This fact is most important as indicating the difference of action of the same remedy by difference in the mode of administration. The temperature of the body was reduced by the agents named above, but not so determinately as by the hydrate.

"Two animals, pigeons, made to go into profound sleep, the one by the hydrate, the other by chloroform (each substance administered subcutaneously), were placed together, and the symptoms were compared. The sleep from the chloroform was calmer; there was freedom from convulsive tremors, which were present in the animal under the hydrate, and recovery was, it was thought, steadier. It was observed, and the fact is well worthy of note, that no irritation was caused in the skin or subjacent parts by the injection of the chloroform and other chlorides.

"The neutralizing action of the hydrate on strychnia was tried, and it was determined that the substance arrests the development of the tetanic action of the poison for a short period, and maintains life a little longer afterwards, but does not avert death. This subject deserves further elucidation.

"When the hydrate of chloral is given in an excessive dose it kills: there are continuance of sleep, convulsion, and a fall of temperature of full eight degrees before death.

"The post-mortem appearances were noticed after a poisonous dose. The vessels of the brain are found turgid with blood. The blood is fluid, and coagulation is delayed (in a bird to a period of three minutes), but afterwards a loose coagulum is formed. The colour of the brain substance is darkish pink. The muscles generally contain a large quantity of blood, which exudes from them, on incision, freely. This blood coagulates with moderate firmness. Immediately after death all motion of the heart is found to be arrested. The organ is left with blood on both sides, but with more in the right than in the left side. The colour of the blood on the two sides is natural, and the coagulation of this blood is moderately firm. The other organs of the body are natural.

"Other observations were made on the changes which the blood undergoes when the hydrate of chloral is added to it. The corpuscles undergo shrinking, and are crenate; and when excess of hydrate is added the blood is decomposed in the same way as when treated with formic acid. The summary of the author's work may be put as follows:—

"Hydrate of chloral, administered by the mouth or by hypodermic injection, produces, as Liebreich states, prolonged sleep.

"The sleep it induces, as Liebreich also shows, is not preceded by the stage of excitement so well known when chloroform is administered by inhalation.

"The narcotic condition is due to the chloroform liberated from the hydrate in the organism, and all the narcotic effects are identical with those caused by chloroform.

"In birds the hydrate produces vomiting in the same manner, and to as full a degree, as does chloroform itself.

"The sleep produced by hydrate of chloral is prolonged, and during the sleep there is a period of perfect anæsthesia; but this stage is comparatively of short duration.

"The action of the hydrate is (as Liebreich assumes) first on the volitional centres of the cerebrum; next, on the cord; and, lastly, on the heart.

"*Practical applications.*—Whether hydrate of chloral will replace opium and the other narcotics is a point on which the author was not prepared to speak. It is not probable that it will supersede the volatile anæsthetics for the purpose of removing pain during the performance of surgical operations, but it might be employed to obtain and keep up the sleep in cases of painful disease. This research had, however, led to the fact that chloroform, when injected subcutaneously in efficient doses, leads to as perfect and as prolonged

a narcotism as the hydrate, with an absence of other symptoms caused by the hydrate, and which are unfavourable to its action. This was a new truth in regard to chloroform, and might place it favourably by the side of the hydrate for hypodermic use. Lastly, as the hydrate acts by causing a decomposition of the blood—*i.e.*, by undergoing decomposition itself and seizing the natural alkali of the blood, it adds to the blood the formate of sodium. How far this is useful or injurious remains to be discovered. But while putting these views as to practical application at once and fairly forward, Dr. Richardson said it was due to Liebreich to add that his (Liebreich's) theory and his experiments have done fine service in a physiological point of view. They have shown in one decisive instance that a given chemical substance is decomposed in the living body by virtue of pure chemical change, and that the symptoms produced are caused by one of the products of that decomposition. The knowledge thus definitely obtained admits of being applied over and over again in the course of therapeutical inquiry."—*Med. Times and Gaz.*, Sept. 4, 1869.

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6. *Experimental Study of the Physiological Effects of Conicine.*—In a very long essay on this subject, giving the results of a large number of experiments, M. Casaubon states that the active principle of conium is a liquid alkaloid termed conicine, which is chiefly contained in the seeds. Its action is that of a poison paralyzing the nervo-motor system. It effects a certain alteration in the blood, which, circulating through the body, produces different results according to the quantity absorbed. It either increases or produces no alteration on the proper muscular irritability, and it diminishes, if it does not altogether abolish, the motor force transmitted by the motor nerves. In small doses conicine disturbs the function of the various organs, but when taken in poisonous doses, it suspends them after having modified the gases of the blood. When slowly consumed it alters the tissues. Locally applied conicine produces anæsthesia of the peripheric extremities of the sensory nerves. In poisonous doses it first produces peripheric hyperæsthesia by exalting the excitability of the spinal cord, and ends by suspending the functions of the sensory nerves. The exaltation of the functions of the spinal cord, which is only transitory, is a consequence in the first place of its diminishing the supply of blood to the organ, and subsequently of its reducing the amount of oxygen conveyed by the blood. Conicine, moreover, produces sighing and sleepiness, which are referable to the causes just mentioned, but in particular to the direct action of the poison on the medulla oblongata. In regard to the extremities of the ganglionic nerves, distributed to the contractile fasciculi of the vessels, and the smooth organic fibres, conicine produces first an exalted action in them, owing to excess of carbonic acid in the blood, and secondly a diminution of action, owing to the want of oxygen in the blood.

In small doses, therefore, it produces contraction of the smaller arterial branches, but has no marked effect on the pulse in the radial artery; in poisonous doses it produces relaxation of the vascular walls, the pulse becoming soft and compressible. In small doses conicine augments the vigour of the cardiac contractions, and perhaps retards them; but when poisonous doses are taken, after primarily augmenting their force, it accelerates them, and finally renders them intermittent, irregular, and slow. In accordance with this action on the circulation the temperature of the body is first augmented and then depressed. Conicine modifies the gases of the blood by volatilizing in them, as a result of which oxygen is not absorbed as before, whilst carbonic acid accumulates. Applied locally in small quantities, conicine diminishes the secretions of the eye, but has no effect upon the pupil; in larger doses, however, it appears to dilate the pupil and to diminish, after having previously augmented temporarily, the secretions of the eye. Besides other effects, it diminishes the accommodative power of the eye. In poisonous doses conicine augments the salivary secretion, and in the first period produces a similar effect on the renal secretion. Its action on the kidneys and liver, however, requires further investigation. It is to be noticed that the activity of the plant is very much dependent on the climate of the place where it is grown, so that whilst English grown conium is so feeble that it has scarcely any action, and that grown in the Crimea

possesses so little activity that the peasants eat it, it is so active in the Isle of Ceos that in view of its immediate and rapid action, all who have attained the age of sixty are poisoned with it in order that food may be left for the remainder of the population. About 4 milligrammes (or .15 grain) of conicine are sufficient to kill a frog, and according to Orfila 10 or 12 drops prove fatal to a large dog.—*Practitioner*, Sept. 1869.

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7. *Action of the Various Opium Alkaloids on the System.*—M. WALDEMAR BAXT, of St. Petersburg, has made elaborate researches on this subject, and comes from them to the following conclusions: 1. The whole group of opium alkaloids taken together constitute a series of agents with two specially characteristic actions—*narcotic* and *tetanically convulsive*. 2. Each individual alkaloid possesses one or the other of these characteristic effects exclusively, or else a blending of the two opposed actions, in consequence of which the one or the other becomes prominent, while the other is more feebly pronounced. 3. The first place as a pure *narcotic* must be given to papaverine. It is followed by morphia, narceia, codeia, etc., with constant diminution of the narcotic character of the influence, and continually increasing convulsive tendencies, which, in thebain, reach the level of complete tetanus, indistinguishable from that produced by strychnia, except by the size of the dose required. 4. Thebain holds the highest place as a convulsive, and following it in diminishing order come porphyroxin, narcotine, codeia, etc., with gradual loss of convulsive and gain of narcotic power. 5. Thebain is quite similar in its action to strychnia; and as larger doses are required, it may be that we shall come to employ it in the cases where strychnia is now used, on account of its less dangerous qualities. 6. Papaverine, while producing the same effects as morphia, has the preference over the latter in cases where the latter cannot be used on account of its unpleasant after-results, none of which can follow papaverine. 7. Papaverine and morphia, acting quite oppositely to strychnia and thebain, may be employed with advantage in cases of poisoning with the latter substances. 8. Papaverine and morphia act first on the peripheral ends of the sensory nerves; they can therefore be employed as local anæsthetics in neuralgia, and in various neuralgias without central lesion. 9. The muscles and the motor nerves suffer no change in function from the action, either of papaverine or morphia. 10. Papaverine and morphia especially diminish reflex excitability, for they first affect the peripheral ends of the sensory nerves, and partly, also, perhaps the sensitive fibres in their course, and probably also the central brain elements. 11. Autochthonous reflex inhibition centres are not affected recognizably by either papaverine or morphia.—*Practitioner*, Sept. 1869, from *Archiv f. Anat. u. Physiol. Reichert u. Dubois-Reymond*, No. 2, 1869.

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8. *Therapeutic Value of the Cinchona Alkaloids.*—*The Indian Annals of Medical Science* (No. XXV., Jan. 1869) contains a long report on this subject by Dr. Jos. EWART. The therapeutical value of the sulphates of Quinidina, Cinchonidina and Cinchonia was tested by Dr. E. during the highly malarious month of Oct. 1866, on the fever cases admitted into the Medical College Hospital. The mode of using the alkaloids was, whenever practicable, to give a twenty-grain dose in the sweating stage of intermittent fever, and to follow this up by five or ten-grain doses every four hours during the intermission; or, when the paroxysm was successfully averted, three times a day. And these or smaller doses, if deemed judicious, were had recourse to daily, in the manner prescribed, until the tendency to recurrence of the paroxysms appeared to have been completely broken. In *remittent fever*, the twenty-grain dose was not exhibited unless the remission was *very* well pronounced. But from three to ten-grain doses were given, three or four times a day, throughout the case, regardless of the exacerbation, in conformity to my plan of giving quinia in analogous cases. As with quinia, so with quinidina, cinchonidina and cinchonia, the object here is, gradually to saturate the system with the antiperiodic, so that when a well-defined remission does occur, a sufficient quantity may have been absorbed to moderate or prevent a repetition of the febrile exacerbations.

The following are the general conclusions drawn by Dr. E. from his experiments:—

(*a.*) Sulphate of Quinidina is an excellent antiperiodic in from 20 to 10 or 5-grain doses. It is probably not inferior in power to quinia. It is easily tolerated by the stomach. (*b.*) Quinidina is a good bitter tonic in from 5 to 3-grain doses. It may be combined with ferruginous tonics in case of anæmia. (*c.*) Quinidina is less disagreeable to the taste and stomach than quinia; moreover it is not accompanied with the unpleasant effects expressed under the term cinchonism.

Sulphate of *Cinchonidina*. (*a.*) Cinchonidina stands next to Quinidina in antiperiodic power. Dose, as an antiperiodic, 20 to 10 grains; as a tonic, 5 to 3 grains. (*b.*) Cinchonidina is agreeable to the stomach, and is not accompanied by symptoms analogous to cinchonism.

Sulphate of *Cinchonia*. (*a.*) This is, doubtless, an antiperiodic, in from 20 to 10-grain doses. (*b.*) The irritability of stomach set up by it is *the* great objection to its ever taking rank as a substitute for either of the preceding alkaloids. (*c.*) This may probably be obviated, to a certain extent, by injecting an efficient solution of it underneath the skin by the hypodermic method. (*d.*) Cinchonia is a good tonic in from 5 to 3-grain doses.

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9. *Kinovic Acid.*—Dr. Kerner states (*Deutsche Klin.*, xx. p. 81.) that this acid is the chief cause of the tonic properties of cinchona bark, and recommends its employment as a therapeutic agent. He employs kinovate of lime as the best form for the administration of the acid; to be given in the form of powder. When given even in large doses it produces no cerebral congestion, as the nitrogenous constituents of bark do, and adults experience not the slightest ill effects after taking daily half or three-quarters of an ounce of the salt. It acts as a bitter and tonic, and is superior to most other bitters. Its most striking effect is upon the peristaltic movement of the intestines, which is at once abated; hence the remedy is a valuable one in severe dysentery and in nervous diarrhœa. Forty grains of the kinovate of lime in powder, or the same quantity in water, to which sufficient phosphoric acid is to be added to precipitate the kinovic acid, is an average dose.—*Syd. Soc. Bienn. Retrosp.* 1869.

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10. *Therapeutic Action of the Iodides of Potassium and Sodium.*—M. Rabuteau has lately made some experiments on the iodides of these alkalies which have a direct therapeutical bearing. He dieted himself for the space of a month, as far as possible, upon the same kind and quantity of food, and found that he eliminated from 325 to 372 grains of urea daily. He then took 15½ grains of iodide of potassium daily, and found that the quantity of urea daily excreted fell to between 201 and 294 grains. And a similar result was obtained with the iodide of sodium; the diet in both instances continuing unchanged. The absolute quantity of urine discharged was not increased unless, owing to dryness of the throat, more water was ingested. Now, since arsenic taken in small doses occasions the same changes in the urine, and both this and the iodides cause an increase of the appetite and a tendency to the deposit of fat in the body, M. Rabuteau proposes that they should be employed in combination where no counter-indication exists, as remedial means, especially in phthisis, in intermittent fevers, and articular rheumatism, whilst they may also be combined with well-known specifics, as quinia, etc. In gout, iodide of potassium, in large doses, is of value on account of its solvent powers on uric acid.—*Practitioner*, Sept. 1869, from *Centralblatt*, May 29.

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11. *Action of Tartarized Antimony on the Animal Organism.*—From experiments instituted by A. Nobiling (*Schmidt's Jahrbuch*, 1868) to determine what are the effects upon the living organism of tartarized antimony when given in small doses continued for a length of time, he deduces the following conclusions: 1. Tartarized antimony produces two distinct effects, one upon the heart, another upon the alimentary canal. 2. Each of these effects respectively is produced by a single one of the chemicals which enter into the composition of tartarized antimony. The alkali and the antimony. The influence of the first

being exerted upon the heart, of the second upon the alimentary canal. 3. The alkali exercises upon the heart a relaxing or depressing influence. Whether this be caused by its causing a direct paralysis of the muscular texture of the heart or through the action of the alkali upon the cardiac ganglia has not been as yet satisfactorily made out. 4. The tartaric acid of the tartarized antimony exerts no direct or independent action upon the organism. 5. The alkali when given in minute doses, as in the protracted administration of tartarized antimony, causes simply a retardation of the action of the heart. 6. The alkali, when given in small doses, repeated at short intervals, causes, in the first place, an acceleration of the pulse, and an increase in the frequency of respiration, followed by a decrease in both, together with a diminution in the temperature of the body and evident muscular debility. 7. Frequency and fulness of pulse occurring under the influence of the alkali during the use of tartarized antimony are always in inverse relation to each other. 8. Difficulty of respiration, and general plethora, with hypertrophy of the liver, spleen, and kidneys, which were observed to occur after the administration of tartarized antimony, are probably referable to a diminution of action in the heart, and the consequent overloading with venous blood of the large vessels. In the same way is to be explained the frequent occurrence of albuminuria after a long-continued use of tartarized antimony. 9. Death ensuing after the taking of a large dose of tartarized antimony is the result of paralysis of the heart. 10. When the administration of tartarized antimony is long continued, there results, at first, a catarrhal inflammation of the mucous coat of the alimentary canal; the longer continuance of the antimony will, after a time, induce, in patches, throughout the stomach and bowels, inflammation of a very acute character, followed by ulceration and consequent inanition. From these facts Dr. N. is led to speak disparagingly of the therapeutic value of tartarized antimony. As an emetic he would reject it entirely—inasmuch as the emesis produced by it is liable to be succeeded by a state of collapse, in consequence of the sedative action of the alkali on the heart. It is also an article altogether unadapted for use in typhoid fever, in pneumonia, bronchitis, and pleurisy. Its apparent beneficial influence in these diseases being counterbalanced by its deleterious action upon the intestinal mucous coat—this is especially to be apprehended when its administration in small doses is required to be continued for a length of time. Finally, the employment of a combination of an alkali with antimony, as in the case of tartarized antimony, is under no circumstances necessary. No perceptible modification of the action of either article upon the living organism being caused by their chemical combination.—*Vierteljahrschrift f. d. Praktische Heilkunde. Prag.* 1869. D. F. C.

12. *New Salve for Chapped Nipples.*—M. BLACQUIÈRE has devised the following ointment, which is said to give unfailing relief to cracked nipples, in three or four applications: Cacao butter, 10 parts; sweet almond oil, 2 parts; extract of rhatany, 1 part. Mix.—*Practitioner*, June, 1869.

13. *New Mode of preparing Medicines for the Army or Navy.*—DR. ALMÉN, of Upsala, recommends, in order to save space, that various remedies should be prepared for the above services in the form of gelatine leaves or lozenges. The gum, whilst warm, should have a little glycerine added to it, to prevent its becoming hard. The remedy required is then mingled carefully with it, and the whole poured on a flat table, and when cool divided into masses of equal size. This mode of preparation has the advantage that it preserves the drugs to a considerable extent from the injurious effects of external agents, and checks, or altogether prevents, internal changes.—*Practitioner*, Sept. 1869, from *Centralblatt*, June 19.

14. *Preparation of Medicated Pencils.*—An interesting and practical paper has been written on this subject by M. Bouilhon, pharmacien. He remarks that the pencils of nitrate of silver, of tannin, and of various other substances, which are in ordinary use, are always both too hard and too brittle. The point is too hard and sharp, and cannot be applied without doing harm to some deli-

cate tissues, such as those of the eye; and it is also so brittle that it constantly breaks to pieces just as it is being used. In view of these defects M. Bouilhon has devised the following improved mode of manufacture. He reduces the medicament, whatever it is, to impalpable powder, and mixes it with an equal weight of melted gutta percha; the mass, while still hot, is rolled into the shape and size desired. These pencils are too elastic to break, and they can be scraped to any sort of point which may appear desirable in the particular case. It is necessary from time to time to revivify them by scraping, otherwise it may happen that the point contains so much gutta percha, and so little of the medicament, that the crayon is practically inactive.—*Practitioner*, Aug. 1869, from *Bull. Gén. de Thérap.*, June 30.

15. *Antiseptic Cere-cloth for covering Wounds.*—Mr. Edward Lund brought to the notice of the Surgical Section of the British Medical Association, at its late meeting, a material which he says he has "lately used with great advantage for covering wounds, and which I have called *antiseptic cere-cloth*. It is, as the name implies, cloth or thin calico saturated with waxy matter in the form of solid paraffin, to which are added a little oil and wax, with carbolic acid in certain proportions. It possesses this double property, that, when placed over a wound, ulcer, or the opening of an abscess, it not only serves to exclude the air as an impervious dressing to the part, but it constantly emits from its surface the vapour of carbolic acid, as it is disengaged by the heat of the body, and so forms an antiseptic atmosphere around the wound.

"It will be found an economical and ready substitute for the antiseptic lac plaster of Professor Lister, by which he has obtained wonderful results in the management of severe lacerated wounds, abscesses, and the like."

He makes the cere-cloth of three degrees of strength, "as it contains one-fourth, one-sixth, or one-eighth of carbolic acid. The strongest quality is needed in the management of the early stages of a wound; the others are more useful while cicatrization is going on.

"The exact formulæ for the cerates with which the calico is saturated are as follows: the form in each case being intended for twelve fluidounces of the cerate in the liquid state—enough to spread about one square yard and a half of the cere-cloth. The quantities which I give are to be measured by bulk, and not by weight—that is, for the carbolic acid and the oil, as well as the paraffin and the wax which have been previously liquefied; for I find that in this way I get a greater uniformity in the composition.

"No. 4, or the strongest form of the cerate, is composed of pure carbolic acid, Calvert's *liquefied*, f. ℥iij; olive oil (coloured red with alkanet-root, to distinguish the cerate), f. ℥iss; yellow wax, *liquefied*, f. ℥iss; paraffin, *liquefied*, f. ℥vj. Mix.

"No. 6, the next in strength, and of a yellow colour, is composed of pure carbolic acid, f. ℥ij; olive oil, f. ℥iiss; yellow wax, f. ℥iiss; paraffin, f. ℥v. Mix.

"No. 8, the weakest, which should be nearly white, is composed of pure carbolic acid, f. ℥iss; olive oil, f. ℥j, f. ℥vj; white wax, f. ℥j, f. ℥vj; paraffin, f. ℥vij. Mix."—*British Med. Journ.* Sept. 4, 1869.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

16. *Artificial Tuberculosis.*—Dr. Burdon Sanderson, in the *Report of the Medical Officer to the Privy Council* for 1868, defines artificial tuberculosis, and makes special reference to the mode in which it modifies the structure of the affected tissues and the channels by which the tuberculous infection is conveyed and distributed.

Strongly impressed with the conviction that every pathological question must be approached from its physiological aspect, and that no disease can be really

understood otherwise than as a modification of healthy function, Dr. Sanderson devotes nearly half of his report to the investigation of the minute anatomy of the parts which are the favourite seats of tuberculosis, and to the *comparison of the morbid products with the original structures.* As the result of this inquiry he arrives at the following conclusions, the importance of which, if they are confirmed by further observation, cannot be doubted:—

1. The characteristic product of tuberculosis is not an aggregation of shrivelled particles of irregular form, but a tissue formed of lymph-corpuscles, held together by a network of hyaline connective substance.

2. There is a close structural analogy between this tissue and that of certain follicular organs belonging to the lymphatic system, *e. g.*, the follicles of Peyer, the similar structures recently discovered in the conjunctiva and in the mucous membrane of the pharynx and the ampullæ of the lymphatic glands.

3. All the favourite seats of tubercle, whether in the massive organs or in the serous or mucous membranes, are characterized by the presence of similar tissue, which, from the analogy stated above, might properly be called adenoid. Notwithstanding that this adjective has already been introduced into pathological nomenclature in another and entirely different sense, Dr. Sanderson prefers it to any other.

4. The distribution of adenoid tissue in the body is in intimate relation with the arrangement of the lymphatic system. The author has for the first time shown that in the great serous membranes (which v. Recklinghausen's discoveries have taught us to regard as lymphatic reservoirs) it forms sheaths around the bloodvessels or masses of microscopical dimensions and irregular contour underneath the epithelium. In the viscera it is distributed here and there in the course of the lymphatic channels.

5. In the peritoneum tuberculosis consists in the enlargement or overgrowth of these sheaths or masses of adenoid tissue, and consequently the tuberculous nodules which are formed have the same intimate structure, and stand in the same anatomical relation to the vessels and the epithelium. In the organs the essential lesions also consist in overgrowth of pre-existing masses of adenoid tissue.

6. The primary local lesion in artificial tuberculosis, whether it originates traumatically or by inoculation, consists in the development at the seat of injury of granulations or nodules, which have the similar structural characters with those of adenoid tissue elsewhere, but cannot as yet be shown to be in relation with the absorbent vessels.

7. The first step in the dissemination of the tuberculous virus consists in its being absorbed primarily by the lymphatics (by which it is conveyed to the lymphatic gland, of which they are tributaries), and secondarily by the veins.

Having thus entered the systemic circulation, it is conveyed by the arteries to the serous membranes, by means of which it is distributed to the various organs contained in the serous cavities.

8. In these organs those parts which are in relation with their serous coverings are first affected. From these the infection is conveyed by the lymphatics, exciting the adenoid tissue in its course, and thus giving rise to tuberculous new growths. The final stage of the process consists in the tertiary infection of the lymphatic glands of each diseased organ, which consequently undergo enlargement, induration, and eventually become caseous.

This enlargement is due to the multiplication of cells in all the tissues of the organ, but more particularly in the alveoli; the hardening to a process of fibrous degeneration, the peculiarities of which are carefully and minutely described in the report. The caseation consists in slow necrosis of the previously indurated and anæmic parts. From the first the gland is incapable of performing its functions, and from the moment that induration commences the absorbents of the organ to which it belongs are blocked up.

In the live guinea-pig tuberculosis, or, as it might be designated, adventitious adenoid tissue, undergoes fibroid degeneration and caseation, the results of which cannot be distinguished from those observed in the normal adenoid tissue of the lymphatic glands and of the spleen. Dr. Sanderson anticipates that it will soon be possible to show that in man, as well as in the lower animals,

tuberculosis is an infective disease of the lymphatic system; and that while, on the one hand, the serous membranes play the most important part in the generalization of the tuberculous infection, *i. e.*, in conveying it to the organs contained in the great serous cavities, its distribution inside of those organs is governed by that of the lymphatic vessels.—*Bienn. Retrospect Syd. Soc.* 1869.

17. *Pathology of Phthisis.*—The pathology, and in consequence the prognosis of this disease, have received important additions and modifications during the past two years. The results of the various researches which have been recorded above, on the subject of tubercular inoculation, have added the last links which were necessary to the proof that under the word phthisis—used roughly for destructive pulmonary disease attended with wasting—there are really included a variety of disorders with most important differences in their essential nature. Several things have become abundantly clear. The most practically important of these is the fact that wasting disease, attended with *cheesy* deposit in the lungs, may certainly, and in truth very often does, result from a mere neglected catarrhal pneumonia or other inflammatory affection, in which there is increased cell-formation within the finer bronchial tubes, which extends itself to the alveoli, and that a considerable proportion of such cases is curable. Secondly, that miliary or gray tubercle (to which the term "tubercle" increasingly tends to be limited) is, in the majority of instances at least, altogether a secondary production, the result of absorption of infective matters of various kinds, of which cheesy matter from lung deposits is, perhaps, the most common. It is apparent that the advent of true tuberculosis, in a case previously distinguished only by cheesy deposits and by more or less constitutional hectic, is the commencement of a new and much more dangerous state of things, from which recovery rarely, we may practically say almost never, occurs. A third series of facts which have been brought into great and possibly exaggerated prominence, are those which are observed in a class of cases distinguished by a special tendency to fibroid changes within the lung. Only a few observers maintain that these cases form an entirely separate group; yet in a prognostic point of view it will certainly henceforth be of the highest consequence to note the following group of phenomena: Limitation of deposits to one lung; slow progress of the disease; absence of fever and sweating; tendency to retraction of the chest wall.

Finally, it may be noted that there is a greatly increasing tendency to consider *hemorrhage* as a comparatively unimportant occurrence in pulmonary disease. So far from its having that serious or even almost necessarily fatal augury which was ascribed to it by some of the most distinguished classical authorities not many years since, it is the tendency of recent observation to associate hemorrhage rather with a curable class of cases, and to regard it as frequently affording a harmless and even beneficial relief to mechanical congestion.—*Syd. Soc. Bienn. Retrosp.* 1869.

18. *Pulmonary Hemorrhage.*—The following are NIEMEYER'S conclusions on this subject:—

1. Abundant bronchial hemorrhages occur more frequently than is supposed in people who neither then nor ever afterwards are consumptive.

2. In many cases the commencement of consumption is preceded by abundant hemorrhage, but there is no genetic connection between the two, which really arise both from a common source. The patient has, in fact, a predisposition to them both.

3. Hemorrhages from the bronchial mucous membrane proceeding from consumption are sometimes in true genetic connection with it, inasmuch as the hemorrhage may lead to inflammatory processes in the lungs, terminating finally in their breaking down.

4. Bronchial hemorrhages occur much more frequently in the course of a consumption than before the disease. They really refer to the time in which the lung disease was as yet latent.

5. Bronchial hemorrhages occurring in the course of consumption may make

that disease fatal by means of their tendency to hasten the destructive inflammatory processes.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Klin. Vorträge über d. Lungenschwindsucht*, Berlin, 1867.

19. *The Causes of Cough.*—Dr. NOTHNAGEL has made a series of experiments in order to determine the question what parts of the respiratory apparatus are sensitive in such a manner that their irritation causes a cough. His experiments were made upon cats and dogs. 1. A young strong cat had the hyothyroid membrane opened, and a piece of the thyroid cartilage cut out above the vocal cords, so that one could look down clearly upon the cords. When the mucous membrane was gently irritated, or even pretty strongly excited with a sound, no trace of cough was produced; nor when the irritation was extended to the posterior part of the epiglottis, and the whole extent of the vocal cords. But when once the posterior wall of the larynx was irritated through the glottis there was violent coughing. From this we learn that irritation of the healthy mucous membrane of the windpipe above the two cords, and of the upper surface of the latter, does not produce cough. A further series of experiments were made to determine whether cough could be produced by irritating the mucous membrane of the trachea. It was discovered that this irritation did produce cough, but the cough was not so immediately and easily produced by irritation of the windpipe as of the higher parts. While the slightest irritation of the larynx produced energetic cough, it was necessary to be very much more rough in exciting the trachea in order to produce the same effect. It is also striking to see how quickly the trachea, when opened, loses its sensibility, so that after a time it is impossible to produce a cough. In this way it is easy to see how some experimenters have discovered different results from Nothnagel's.

These results obviously bear upon clinical experience. We know, for instance, that in a tolerably severe and recent catarrh of the throat pressure on the sides of the neck, and upon the manubrium, immediately produces cough. Irritation of the bifurcation of the windpipe produces much more energetic coughing than that of the trachea; in fact, this part is as irritable as the larynx. This fact also corresponds with the well-known clinical experience, that in the deep-seated catarrh pressure on the manubrium will often cause cough.

In order to test these results, further experiments were now made on section of the superior laryngeal nerves, and the trunks of the vagi above the point of their origin. When both vagi were divided irritation of the larynx produced cough, but irritation of the trachea and its bifurcation had no effect. When the superior laryngeal nerves were divided the larynx might be irritated to any extent without the least cough; but irritation of the trachea and its bifurcation produced coughing. These experiments show undoubtedly that it is not only the superior laryngeal nerve whose irritation causes cough, but that yet deeper branches of the vagus, whose terminations supply the mucous membrane of the windpipe, are also capable of causing cough in a reflex manner.

We now come to the question whether irritation of the bronchial mucous membrane causes cough. It is no use to test this question by irritation from above, as by a tracheal fistula. The experiment which Nothnagel devised was as follows: He wounded the lung substance through an opening in an intercostal space. The animal did not cough, but on his making a second puncture it coughed suddenly and violently. Dissection proved that the needle on the last occasion had penetrated a bronchus of medium size. In the next experiment, on a cat, portions of two ribs were cut away, and the collapsed lung was drawn out through the opening and fastened with a thread. A bit of the lung was now cut off with sharp scissors. The surface showed one or more bronchial tubes. These were irritated. When the experiment is lucky one may chance to cut a bronchus partly lengthways, and irritation can then be well applied. The result leaves no doubt that irritation of the bronchi will cause cough directly; nevertheless, it must be confessed these experiments are not so exact as those on the trachea and larynx. It is, of course, impossible to experiment upon the smallest bronchial tubes, but it may be assumed that irrita-

tion of these also would cause cough. It is impossible to form any conclusion as to the result of irritation of the alveoli.

In another series of experiments the result of irritation of the pleura was tested. A dog was experimented upon, a puncture being made through the muscles of an intercostal space. A sound was then introduced so as to cause a pneumothorax, and the sound was moved about in the pleural cavity. No cough was produced. The opening was then enlarged, and further irritation was set up, but no cough occurred. However, it might be said that, although the healthy pleura did not give rise to cough when irritated, an inflamed pleura might produce cough by its irritation. Accordingly a dog was thrown into narcosis with morphia, and in this condition a solution of croton oil in olive oil was injected into the pleura. The skin was closed. When the animal came to itself it winced and cried, but did not cough. The same evening the pleura was irritated, as in the above experiments, in every direction, and there was evidence of pain, but not the least tendency to cough. In order to correct the experiment, the trachea was opened. Irritation of the larynx and the trachea at its bifurcation produced violent cough. Dissection showed intense pleurisy, with considerable exudation and effusion of blood in both pleuræ.

The results thus obtained undoubtedly seem in curious contradiction with the commonly observed fact that cough sometimes attends pleurisy; but the fact is, in all probability, that exact observation would show that in simple pleurisy there really seldom is cough. The probability is, in fact, that in those cases where cough is present there is simultaneous affection of the lung or of the bronchi.

Some observers, for instance, Krimer and Romberg, state that irritation of the vagus trunk causes cough. Most experimenters contradict this, and also deny that irritation of the trunk of the superior laryngeal nerve causes cough. A series of experiments have convinced Nothnagel that the latter opinion is correct. In no single case have we got evidence that irritation either of the uninjured trunk or of the central end of the vagus or of the superior laryngeal causes cough. It is impossible to say what the sources of mistake may have been. The result to which Nothnagel's experiments led entirely corresponded with the physiological law, that irritation of branches of a nerve much more easily produces reflex phenomena than irritation of the trunk. It shows also a remarkable difference between reflex coughing and reflex vomiting. The latter symptom is easily induced, not merely by irritation of the stomach, but of many other places, and of the nervous centres. People have indeed spoken of a centrally produeed cough, but their observations are very doubtful and inconclusive.

In conclusion, the author remarks that there are some other important points yet to be observed as to the origin of cough; for instance, many people talk of a stomach cough, and of the cough in pericarditis. So far he has made no experiments upon these points, but on the whole he is inclined to disbelieve these statements, especially in view of the results obtained by experimenting on the pleura. However, the fact is established that in many individuals cough may be produced by irritation of many particular places. A small branch of the vagus is here probably the medium of irritation.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Virchow's Archiv*, iv. 1, 1868.

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20. *Inflammation and Suppuration.*—The most important researches on this subject which have been made for many years are those of Cohnheim. In an elaborate paper (*Virchow's Archiv*, Sept. 1867) he brings out the following facts. Referring to the researches of His and Struve, he illustrates the results of artificially produced inflammation of the cornea. It is generally believed that under these circumstances the stellate corneal corpuscles increase in size and develop either by splitting of the nuclei and cell-substance, or by the production of young elements from within, which are pus-cells.

More careful examination shows that the new cellular elements are not only pus; on the contrary, it can be seen that the ordinary corpuscles of the cornea are present in exactly their ordinary distribution. The pus-cells exhibit a great variety of shapes, corresponding with their natural contractility. At a

later stage the stellate corpuscles are also seen arranged in successive parallel layers, with the pus-cells irregularly dispersed among them. The curious fact, however, is observed, that the pus-corpuscles change their places; by reason of their contractility they *migrate*. The question now arises, whence are the pus-cells derived? They may either have come from the migrating lymphoid elements pre-existing in the cornea, or may have migrated from without. Putting aside for the moment the case of simple artificial traumatic keratitis, as to which Cohnheim arrives at results not materially different from those of earlier observers, we may refer to his special experiments upon irritation applied at the *centre* of the cornea. If this be touched with solid nitrate of silver so deeply as to destroy the epithelium, and the surplus nitrate washed away with a solution of common salt, the dead part, under the influence of light, will become brown, the rest of the cornea remaining transparent. After twenty or twenty-four hours, however, there is a narrow pale ring round the slough, and at a distance from it, separated by a broad piece of transparent tissue, we observe a cloudy, pale gray streak, while the centre remains unchanged. The external streak increases in size, both as to width parallel to the margin of the cornea, and especially towards the centre. On the third day the cloudiness has usually reached the slough from the upper margin in a wedge-shaped form, and somewhat later a similar wedge joins the centre from the lower border, while the inner and outer portions of the cornea may remain slightly or not at all affected. Later on, whilst the opacity around the slough becomes deeper, the periphery becomes constantly more clear; and on the fifth or sixth day there is only a milky or yellowish-white ring around the cauterized part, while the whole periphery is quite clear.

Microscopically examined, the tissues show the following appearances: At first the only important changes are in the gray marginal streak; there are numerous pus-corpuscles here, the greatest number being at the outer edge. Later, when the opacity concentrates round the centre, the pus-cells here also become extremely dense, while their number as much diminish at the margin of the cornea. The slough never contains pus-cells.

If the experiments be varied by setting up continuous irritation, as that of a thread drawn through the cornea and left, the opacity is continuous and the cornea swells, and even forms abscesses which may rupture. Cohnheim explains the fact that purulent infiltration always begins either at the upper or the lower border of the cornea by the fact that here the largest and most numerous bloodvessels approach the cornea. The above experiments were made on frogs, but very similar results were obtained in observations on rabbits, although the greater tendency to slough often interfered with the accuracy of observation.

These experiments made it very probable that the pus migrated into the cornea from without; and Cohnheim, in subsequent experiments, accordingly fed the animals with particles of insoluble coloring matter, hoping that these would render the pus-cells, which easily absorb such matters, very easily traceable in their course. In order to avoid fallacies, Cohnheim first experimentally proved that aniline blue introduced into the conjunctival sac, or injected into the anterior chamber, had no effect on the pus-cells of the inflamed cornea.

It now remained to be seen whether the lymphatics could be the channel of introduction. Aniline blue having been injected into a lymph-sac of the frog, the tissues show nowhere any pigment; but if we cause a keratitis, some of the pus-cells will contain blue granules. The number of cells thus stained depends pretty much on the quantity of colouring matter successfully introduced. These experiments still left it doubtful whether the pus-cells migrate directly from the lymphatic system, or by a more indirect road to the cornea, namely, by the bloodvessels.

It was already known, from the researches of Recklinghausen, that solid particles introduced into the lymph-sacs easily enter the bloodvessels; for the most part they were found in the interior of the white corpuscles. Cohnheim now experimented on direct injection of colouring matter into the blood with precisely the same results as those obtained by injection of the lymph-sac. No coloured granules are seen in the normal tissues, but if the cornea be ex-

cited its pus-cells will be seen to obtain colouring matter. These experiments, so successful on the frog, fail in the rabbit, probably from deposition of the pigment in the liver.

The researches were now extended to a highly vascular tissue, the peritoneum of frogs which had been previously poisoned with curara so as to render them motionless, the effect being kept up by successive small injections. The inflammation was excited by exposure of the mesentery to the air. Congestion is rapidly developed till a dense uniform redness is produced; in a few hours the whole looks cloudy, and the individual vessels become indistinct. In from fifteen to thirty-six hours the mesentery and intestine are covered with a soft layer of false membrane, which under the microscope is seen to consist entirely of densely crowded contractile pus-cells, with a very few red bubbles, all imbedded in a slightly granular material. The first step in the inflammation is a dilatation of the arteries, which seems to begin immediately on the application of atmospheric irritation, and in ten or fifteen minutes may be very pronounced. It is uniform throughout; only here and there we may find a small spot where an artery is suddenly contracted, with an equally limited piece on the cardiac aspect of the same which is unusually dilated. The next stage, which follows more slowly, is that of venous dilatation. The final result, however, is that the veins and arteries regain their original proportion. At the same time the rapidity of the current begins to vacillate, and after about two hours a diminution of its speed is developed. We can now easily recognize the outlines of individual corpuscles. It can now be seen plainly enough that the white corpuscles tend towards the walls of the vessels; at the height of retardation they seem to stick there till the next wave carries them on. In the veins the outside zone of the current, the *original plasma-layer*, contains countless white blood-cells. Slowly, and sometimes jerkingly, several of these enter the field, and soon come to rest at some point of the wall of the vessel, either permanently or only for a time. By degrees the whole peripheral zone of the vessel is filled with white corpuscles. Within this wall the central red column of blood flows on with uniform rapidity.

Very soon the eye is attracted by a remarkable occurrence. On the external outline of the vein there arise several small colourless button-shaped elevations. These excrescences slowly enlarge till a half globe, about as big as half a white blood-cell, seems to lie outside the vessel. Later this becomes pear-shaped, with a pedicle attached to the vessel. Fine processes and points now begin to radiate from the margin of this pear-shaped corpuscle, which frequently changes its shape; the corpuscles move gradually more away from the vessel till their connection is severed.

There is now a colourless, shining, contractile corpuscle, with one long and a few short processes, otherwise just like a white corpuscle, altogether outside the vessel. The whole process of extrusion may occupy more than two hours.

In three or four hours from the commencement of this process the vein is surrounded by a single but dense ring of the corpuscles; and a few hours later swarms of them extend on all sides, the inner row still adhering to the vessel by their pedicles, while the outermost shorten their pedicles, and get to look just like contractile blood- or pus-cells. The interior of the vessels remains unchanged.

While the arteries and veins dilate, the capillaries become more distinct, probably not from dilatation, but from greater repletion with blood-corpuscles. The current in them is unchanged from the state of health, as to its direction, rapidity, and uniformity. As in the veins, there is often a stagnating layer: but this layer contains red corpuscles as well as white.

In these capillaries, in which the blood-current continues uniform, no change ensues; but whenever there is partial or complete stagnation we observe, in the first place, amœboid changes of form in the colourless cells, and, soon after, the same protrusion through the wall of the vessel as has been described in the case of the veins. But in the capillaries not only white, but also red cells escape through the walls. A singular element in the migration of the latter is the length of time during which they sometimes remain sticking *in transitu*. In

this position it sometimes happens that their inner half is torn off and carried away by the blood-current.

Nothing is more interesting than the demonstration which Cohnheim's experiments afford, that the whole business of cell-formation in inflammation of a serous membrane is performed by the migrating corpuscles, and that the epithelium-cells have nothing to do with it. If the latter perish at all it is only by being cast off.

Cohnheim followed the process of inflammation up to the point where the mesentery is filled with crowds of contractile cells, and also covered on both sides by a fibrinous layer filled with such cells.

Attempts were made to exhibit the same phenomena in mammalian animals; and although the experiment is less satisfactory, substantially the same facts were observed, as to the migration of cells, as in the researches on frogs. Cohnheim has no doubt that the experiments thus performed on the mesentery fairly represent the pathological processes in inflammations of other parts. He leaves it doubtful whether emigration of white cells be the only source of pus, but is disposed to deny that the corpuscles of a connective tissue ever produce pus-cells by division.—*Sydenham Soc. Biennial Retrospect*, 1869.

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21. *Occurrence of two Specific Fevers at once.*—Some interesting cases are reported by MONTI (*Jahr. f. Kinderk.*, 1868), and by STEINER, of this kind of complication. Monti reports a case in which measles and scarlatina were combined. The family in which this occurred was composed of five children—three boys of the respective ages of ten years, eighteen months, and two months; and two girls of fourteen and six years. The two youngest boys and the younger girl had no connection with other children; the eldest boy and girl went to separate schools. In the boys' school there was a severe epidemic of measles. The boy appears to have caught the measles there. In the girls' school there was an epidemic of scarlet fever, and the eldest girl became affected with it in the middle of January. The child of eighteen months caught the measles from the elder brother, and just as this was vanishing she showed symptoms of scarlet fever. The girl of six years was exposed to both contagions, and on the 21st January she exhibited feverish symptoms, apparently combining both affections. The eyes and nose and the throat exhibited the characteristic symptoms of the two diseases. On the third day a scarlatina rash was well developed: on the following day this somewhat faded, but some crescentic spots of measles were visible. The two eruptions vanished about the fifth or sixth day, and the throat and nose symptoms then also disappeared. On the seventh day the first symptoms of desquamation appeared, and this was fully developed by the twelfth day. On the twentieth day the child was bathed, and pronounced well. Steiner reports a case of smallpox and measles. A girl of six years was taken ill with rigors, feverishness, and vomiting, which increased during three days; on the fourth day the characteristic smallpox eruption appeared. Two days later, the fever still continuing, it was noted that the eyes were congested, and there was dry cough, &c. Next day there was profuse catarrh; the cough was worse. The breathing was quick, the pulse and temperature higher, and certain dark red spots like measles appeared. The following day the latter were more clear. On the next day to this the smallpox eruption had much subsided—that of measles was highly developed. The temperature went on diminishing on the night of the tenth day. There was a gentle sweat. The pulse had fallen next day to 96. The patient was dismissed, fully cured, on the twenty-second day.

Steiner also reports a case of measles and scarlatina. A child of five years old, scrofulous, was attacked with catarrh, and fever and cough. Four days later the eruption of measles appeared. Inspection of the mouth and pharynx showed small, scattered, round, and very red spots on the palate. On the fifth and sixth days, the eruption still increasing, the child vomited repeatedly, and the temperature and pulse rose. The fauces were now much swollen and dark red, with a yellowish-gray secretion covering them. Besides the original eruption, the neck and back, and certain parts of the extremities, showed a uniform diffuse scarlatina rash. On the eighth day, the measles eruption being some-

what faded, but the scarlatinal eruption remaining, slight albuminuria and swelling of the submaxillary glands occurred, and the albuminuria continued on the next day. On the eleventh day there was still fever, and there was now blood as well as albumen in the urine, and also fibrous tube-casts. On the thirteenth day scarlatinal desquamation began. There was ordinary scarlatinal dropsy during the next fourteen days.—*Syd. Soc. Bienn. Retrosp.* 1869.

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22. *Connection of Small Aneurisms with Cerebral Hemorrhage.* — Prof. Béhier confirms the pathological discovery of Charcot and Bouchard of the universal existence of small aneurisms of the cerebral arteries in cases where cerebral hemorrhage takes place. These are not like the aneurisms which occur upon a large trunk; they are changes in the little vessels which commence with a sclerosis of the general arterial system of the brain. Small, true, aneurismal, bladder-like dilatations make their appearance, sometimes only bulging out on one side, more frequently fusiform enlargements. To the naked eye, as seen on the surface or in the substance of the brain, they appear as red or blackish objects hardly the size of a millet seed. They are found in the centre of the hemorrhagic effusion itself, and communicate with it by an opening which in all respects resembles the rupture of a common aneurism. Around the rupture one finds the remnants of the membrana adventitia. Occasionally the effusion is at first between the artery and the surrounding adventitia, but finally bursts the latter. In fact, we see in these cases how the coagula in these little aneurisms continue into the blood-clots which form the hemorrhagic effusion. Since Béhier's attention has been directed to the subject he has never failed to find these little aneurisms in every case of cerebral hemorrhage, and he recognizes them as the most important element in the causation of hemorrhagic apoplexy.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Gazette des Hôpitaux*, 20, 1868.

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23. *Human Vaccine Lymph and Heifer Lymph Compared.*—At the recent meeting of the British Association for the advancement of Science an interesting paper on this subject was read by Dr. Blanc. He said that the lymph forced upon the public should be perfectly pure, but the vaccine lymph at present used, he unhesitatingly declared, did not answer this description. He showed, in a variety of statistical extracts, that in the cases of people who had taken cow-pox from milking cows, they still enjoyed perfect immunity from smallpox. The remedy he proposed was simply to return to the system of Jenner. Vaccination direct from the heifer or animal was no new or untried system, and had been established in many large cities of Europe. The advantages of this he entered into. No fatal results had been recorded; and to render compulsory vaccination efficacious, they must return to the system of taking the lymph from the animal, and so restore the glory and usefulness of Jenner's great remedy.—*Lancet*, Aug. 28th, 1869.

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24. *Relation between Epidemic Cholera and Density of Population.*—A memoir, by Ploss (*Zeitschr. f. Medicin, Chirurg. u. Geburtshulfe*, vii.), embracing observations in respect to the outbreak of cholera in the environs of Leipzig, in the year 1866, presents the following interesting facts in respect to the relation existing between density of population and the prevalence and intensity of the disease. In 105 districts there were 68 with an average population of less than 10 to each house; while in 37 it exceeded 10. In the first mentioned 68 districts 41 escaped entirely the disease. In 27 where the ratio of population to each dwelling was under 10, the ratio of mortality was less than 12 for every 1000 of the entire population. Of the 37 crowded localities, only two of the dwellings escaped the cholera. The ratio of mortality was over 12 to the 1000 of inhabitants. It is evident, therefore, that the more dense the population of a district in the environs of Leipzic the more was it prone to an attack of a prevailing cholera epidemic.—*Centralblat. f. d. Med. Wissenschaft.*, 1869, March, No. 12. D. F. C.

25. *Treatment of Delirium Tremens.*—Dr. HERMANN, of St. Petersburg, calls attention to the importance, in estimating the value of remedies in delirium tremens, of recognizing the fact that slight cases get well spontaneously. The critical sleep occurs usually about the seventh day, more rarely on the fifth, and in cases where drinking habits have only been recently commenced, on the third or fourth day; when the illness lasts to the eleventh or twelfth day, complications are to be suspected. Very large experience has convinced the author that remedies usually have little influence; even the largest dose of "nervic" drugs will not cut short the malady, and too great venturesomeness often does harm. The drugs most used are opiates, chloroform, digitalis, tartar emetic, acetate and oxide of zinc; certain stimulants, as alcohol, camphor, sambul; and, besides these, there are the use of cold, isolation of the patient, rest, baths, and moral influence. The oldest and most esteemed remedy is opium, but even this is no specific. Practitioners differ greatly about the proper dose; the medium quantity of one grain four to six times in the day is the most commonly used. In the Obachoff Hospital a grain dose is given morning and noon, and one 2-grain dose in the evening. Such doses usually do good, and may be continued for several days without mischief; but where the patient is continuously maniacal and bathed in sweat, the pulse over 100, and the first heart-sound weak and indistinct; as also where he does not talk loud, but mutters almost inaudibly, and shows a disposition to sinking or to coma, or where no improvement occurs after five or seven days, opium is contra-indicated, and stimulants must take its place. Patients who resist every gastric remedy may be dealt with by subcutaneous injection of morphia. The author does not approve the digitalis treatment recommended by several English authors; he finds it ineffective, and thinks it dangerous. Chloroform is far below opium in utility. A tartar emetic mixture, with three or four grains in the six ounces, is useful in gastric complications, and in active congestion of the chest or head, especially in robust persons, larger and repeated doses readily produce *collapse*. Acetate of zinc (one drachm in six ounces) has frequently proved useful; the author thinks it comes next to opium. Alcoholic stimulants and camphor are indicated in the case of old drinkers; also in relapses, and in cases where restlessness and copious sweating, with weakness of the heart, contra-indicate opium. Capsicum has been used by Hermann in several cases with decided benefit. He gives two drachms of the tincture diluted with water every three hours. He thinks that various other remedies of repute owe their apparent success to the result of *expectation*. Finally, he remarks that acute delirium tremens is a capricious disease, and its prognosis always doubtful. Small local bleedings from the epigastrium, the cold affusion with or without the warm bath, a cool room, mental and bodily rest—these are the foundation of the treatment. The strait-waistcoat is often (!) unavoidable. In after-treatment bitter stomachics, with or without opium, wine, beer, or even small doses of brandy, are found useful.—*Bienn. Retrosp. Syd. Soc.*, from *Petersburger Zeitschr.*, No. 8, 1867.

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26. *Treatment of the Acute Exanthemata by Continuous Ventilation.*—Dr. L. KUGLEMANN (*Deutsche Klinik*, 1869, No. 17) speaks very decidedly in favour of the good effects of free ventilation kept up, night and day, throughout the entire continuance of the attack of either of the acute exanthems—scarlet fever, measles, smallpox, and the like; the doors and windows being left open, while the patient is placed out of the direct current of air thus produced. During the winter similar ventilation, and as free, will be found beneficial, especially when the temperature of the air of the patient's chamber ranges above from 12° to 14° R. Dr. K. has, in this manner, treated 500 cases of measles, and 150 of scarlet fever without the loss of a single patient, and without the occurrence in either instance of any serious complication or of any secondary disease. One child, which had passed safely through the disease (scarlet fever), from direct exposure to cold during convalescence became attacked with nephritis.—*Centralblatt f. d. Med. Wissenschaft.*, June, 1869. D. F. C.

27. *Treatment of Internal Intestinal Stricture.*—Dr. Lambl states (*Virch. Arch.* xlv.) that in three cases of internal stricture of intestine, he saw the best results derived from placing the patient upon his elbows and knees, for as long a time as this position could be retained, gentle friction of the abdomen from the groins upwards to the umbilicus, with both hands, being at the same time applied. The chief benefit of the position referred to is, that in it the contents of the intestinal canal are directed in an opposite course to what they would be were the patient to be laid on his back.—*Centralblatt f. d. Medicin. Wissenschaf.*, 1869, Jan., No. 4. D. F. C.

28. *Subcutaneous Injections in Asthma.*—Prof. Hirtz has tried the effect of subcutaneous injections of morphia in this disease. His first patient was a young girl, handsome and intelligent, and otherwise healthy, but having monthly attacks of asthma. At these times respiration was so noisy as to be heard outside the room. One hundredth of a gramme of acetate of morphia was injected in the arm, and in five minutes the greatest relief was experienced. The same dose since that time has served to cut short all attacks, although almost every sort of treatment had previously been tried in vain.

Prof. Hirtz had also tried the sulphate of atropia subcutaneously. He finds that in doses of a five-hundredth of a gramme it acts more rapidly but less permanently than the above-mentioned quantity of morphia. In chronic cases it may be well to try the two remedies alternately.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Bull. Gén. de Thérap.*

29. *Bromides in Epilepsy, etc.*—Mr. Kesteven has employed the bromides in epilepsy, laryngismus, convulsions, chorea, certain nervous headaches, melancholia, and acute mania. He considers the doses mentioned in works on therapeutics are generally too small, the proper dose being from 15 to 20 grains, which may be continued for a considerable period, and which are never followed by any injurious effects, unless a certain degree of drowsiness be so considered. Dr. Kesteven gives the details of various cases, and concludes with the following propositions: 1. That by reason of their possessing a special influence on nerve tissues, and upon the vaso-motor nerves, whereby they prevent sudden arterial action, we have in the bromides most valuable remedies for certain affections of the nervous system. 2. That in order to obtain their full therapeutic powers the bromides must be given in large doses, and their use prolonged. 3. That where these medicines are not efficacious to work a cure, their influence is sufficient to diminish the severity and prolong the intervals of epileptic seizures.—*Practitioner*, Sept. 1869, from *Journal of Mental Science*, July, 1869.

30. *Echinococcus within the Cavity of the Dura Mater Spinalis.*—Dr. Bartels (*Deutsches Archiv*, v. 108) states that in a case of nervous disease he detected two hydatids (echinococci) within the sac of the spinal dura mater. One of them lay immediately beneath the cervical enlargement of the medulla spinalis on the posterior face of the left side of the latter, which it had flattened by compression. The other hydatid was located 7½ cm. below the first, on the left side and beneath the pia mater. It had also, as the first, compressed the spinal medulla. The consistence of the latter, above the position of the first hydatid, was normal; lower down it was more or less softened—becoming at one part almost diffluent. The length of the cysts was, respectively, 5 and 3.8 cm. By the microscope their true character as *echinococcus cysts* was clearly revealed. The patient was a male, 25 years old. His illness had commenced by a sense of pain in the left arm, extending finally to the right arm. There was, also, pain of the neck, increased by pressure and by the movements of the throat. There soon supervened a sense of contraction in the chest, followed by anæsthesia of both arms; first in the left, then in the right. At the end of two weeks, the power of motion was lost almost simultaneously in both lower extremities—there occurred at the same time retention of urine and involuntary stools. The anæsthesia had now extended over the surface of the body as high as the seventh rib. The freedom of motion in the left arm was impaired. The sensibility of the right upper extremity was not lessened. The left hand

was somewhat benumbed. The muscles of the back, in the neighbourhood of the diseased portion of the spinal cord, and also the ilio-psoas muscles of both sides were paralyzed. The tonicity of the abdominal parietes were diminished. The pupil of the left eye was permanently contracted. Pressure made with the ends of the fingers over the surface of the limbs and of the abdomen produced an appearance resembling the so-called *tache cerebral*. In the further course of the disease vesications, indicative of sphacelus, made their appearance on the feet. The anæsthesia of the trunk ascended to the seat of pain. The sensitiveness and mobility of the upper extremities constantly increased, and in the left arm were experienced severe dragging pains. In the right arm sensibility and mobility were diminished but not obliterated. At a later date there were experienced painful spasms, with œdematous swelling. The patient lay upon his back, with the hips and both heels pressed to the couch. A bronchial catarrh finally set in, with an almost continual contraction of the abdominal muscles, terminating speedily in death. All the symptoms observed during the lifetime of the patient were evidently due to a chronic, very gradually increasing pressure from behind, of the spinal marrow, and its consequent atrophy, and of which condition of things, under all circumstances, they may be considered as diagnostic.—*Centralblatt f. d. Med. Wissenschaften*, January, 1869. D. F. C.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

31. *Albumen in the Urine, sometimes in Conjunction with the Colouring Matter of the Blood, as a Consequence of Surgical Diseases and Operations.*—Mr. HENRY LEE states (*Lancet*, Aug. 21, 1869) that, during the years 1837–8, he collected together "several cases which occurred in St. George's Hospital, in which the urine was albuminous, but in which there was reason to belive that there was no disease of the kidneys. In most of these cases the presence of albumen was accounted for by the ascertained disease of the bladder or of the prostate gland. This, however, was not invariably the case. * * *

"Quite recently two cases have come under my care which have appeared to me to demonstrate that when the blood is contaminated in consequence of accident or disease, albuminous water may be the result, without any organic disease of the kidney. The albumen in such cases, together with the colouring matter of the blood, may escape in very considerable quantities. * * *

"Independently of the cases which have fallen under my own care, I have known of others in which, after a surgical operation or disease, the urine has become albuminous, and sometimes has remained so for a very considerable period. I have also been informed of two cases in which the urine at the same time became very dark coloured, and was supposed to contain blood. The cases which I have given, although few in number, are, I think, sufficient to show that albumen in large quantities may be present in the urine as a secondary affection dependent upon disease in some distant part. Such an affection must be carefully distinguished from any local disease capable of producing albumen in the ureters, bladder, or urethra. In both classes of cases the albumen may be produced independent of any organic disease of the kidneys, and in both it may be mixed with the colouring matter of the blood. From the cases which have come under my notice I am inclined to believe that in the first class the colouring matter of the blood is found independent of any blood-corpuscles; and that in the second the colour depends upon the blood-globules themselves. All the cases which I have known in which the peculiar colour of the urine, to which I have drawn attention, has accompanied the secretion of albumen as a secondary affection (independent of any disease of the kidney, and independent of any affection in the urinary channels themselves), have been instances in which there was evidence, more or less distinct, of coagula having formed in some part of the vascular system. These coagula have been disintegrated and removed. The

colouring matter of the blood has disappeared with the other portions of the coagula; and when we find this same colouring matter reappearing in a disintegrated form in the secretion of the kidneys, we are justified, I think, in concluding that the matter so eliminated formed part of the coagula which had been disintegrated, and removed in the course of the circulation."

32. *Treatment of Aneurism by Iodide of Potassium.*—In our number for January, 1869, we gave an abstract of a paper on this subject by Dr. Balfour, Physician to the Edinburgh Infirmary in which he extols the iodide of potassium, as holding out a better prospect of relief, if not cure of internal aneurism than any other method hitherto devised for its treatment.

In a recent paper (*Ed. Med. Journ.*, July, 1869) Dr. B. publishes some further observations on this subject, with additional cases, making eleven in all. "In my former paper," Dr B. remarks, "I carefully pointed out the many fallacies which embarrass us in making up our mind as to the value of any special treatment in such a disease as thoracic aneurism, in which the symptoms occasionally undergo spontaneous abatement, without any real improvement having taken place; the cases I am now about to relate will, I think, convince even the most sceptical inquirer that, in many cases at least, a real improvement does take place, the permanence of which must depend upon various circumstances, over which neither physician nor physic have any control. The value of the treatment is shown in the fact, that not only relief to symptoms, but positive improvement has been obtained in every case which has submitted to it for a sufficient length of time; while there are many facts which tend to prove that iodide of potassium is not only curative in aneurisms already developed, but that it also acts remedially and prophylactically in the aneurismal diathesis; a much better thing both for physician and patient."

33. *Treatment of Traumatic Tetanus with the Calabar Bean.*—Dr. Eben Watson, Surgeon to the Royal Infirmary, Glasgow, records (*The Practitioner*, Sept. 1869) six cases of tetanus recently treated by him with Calabar bean. Dr. W. has now treated ten cases of traumatic tetanus with this article, and had six deaths and four recoveries. He gives the following table of cases treated with the Calabar bean:—

	Cases.	Recoveries.	Deaths.
Dr. Watson	10	4	6
Dr. Alexander	2	2	0
Dr. Campbell	1	1	0
M. Bourneville	1	0	1
Mr. Ashdown	1	1	0
M. Bouchat	1	0	1
Dr. Macarthur	1	1	0
Drs. Boslin and Curron	1	1	0
Cases treated	18	10	8

"This statement, then," he remarks, "shows favourably for the bean. On the whole, however, I believe that the physiological effects of the drug form the best warrant for its employment in tetanus. We cannot expect infallible cures for any disease, far less for such a disease as this; but what I would urge is that, while we had no reason to look even for benefit from most of the remedies formerly used in cases of tetanus, we have reason from physiology to expect relief in that disease, even when we cannot hope for cure from the Calabar bean; and this has been marked by my experience of its employment. It will be noticed in reading the cases just related, that in all of them considerable relaxation was produced, and the patient often expressed himself as greatly relieved, even when there was little real or permanent improvement of his condition. Surely this is something gained, and surely it indicates that we may learn by and by to use the drug to still greater advantage, and to cure a greater proportion of cases."

The bean, he adds, "acts permanently on the spinal centres of motion, gradually obliterating voluntary power without affecting sensation. It early destroys the power of co-ordination of movements, and soon afterwards the susceptibility of reflex motions.

"While, therefore, the morbid anatomy of tetanus is by no means settled, yet from what is well known of its living pathology, it is evident that the bean, alone or combined with an anodyne, fulfils all the requirements of the case, and that it does so in a way more direct and physiological than is at all usual in therapeutics. We must not, then, be discouraged by a large proportion of deaths from tetanus, even in cases where the bean has been carefully and skilfully employed; neither must we think it useless because sometimes it seems insufficient to combat this terrible antagonist. If in using it we are upon the right road, we can only attain to a better success by continuing to pursue that road until a better and safer has been discovered."

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34. *Destruction of a Cancerous Tumour by Gastric Juice.*—A very remarkable experiment has been made by Prof. LUSSANA. A woman, aged 52, had an open ulcerating tumour, occupying the whole temporal region, adherent to the bones, and presenting all the appearances of cancer. Removal by the knife seemed too dangerous; whereupon Lussana suggested the application of gastric juices as a solvent, and himself provided the juice from the stomach of a dog in which he had established a fistula. After the first three applications of the dressing, so much irritation was excited that a febrile erysipelas set in; a week later the tumour was found to be reduced in volume by one half, and of two hardened glands in the neighbourhood one had disappeared and the other had suppurated. A new application of the juice was now made, and the irritant symptoms reappeared. The tumour continued steadily to diminish, and in about sixteen days from the first dressing there was nothing left but a flat raw surface covered with rather exuberant granulations, and no glandular enlargements any longer existed. Two or three weeks later the wound had entirely healed, and the patient was perfectly well.—*The Practitioner*, June, 1869, from *Gaz. Méd. Lomb.*, Feb. 20

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35. *Medicinal Treatment of Ulcers of the Legs.*—Mr. CHRISTOPHER HEATH thinks that sufficient prominence has not been given to the value of internal remedies in the treatment of ulcers of the legs. The three drugs, he says, which he constantly "employs as adjuvants to the local treatment of ulcers of the leg are opium, iodide of potassium, and arsenic; and each has its appropriate class of cases. Mr. Skey has on more than one occasion directed the attention of the profession to the advantage of employing the first of these—opium—in the treatment of ulcers, and lays special stress upon the value of the drug in cases of chronic callous ulcer. I find opium of the greatest service, however, in the small irritable ulcer often found in combination with varicose veins, and also especially in any form of ulcer in which a sloughing action has supervened. I have had recently a case of tertiary ulcer in the leg making satisfactory progress, when it was suddenly attacked with violent sloughing action. This rapidly yielded, however, to the free administration of opium, combined with local poulticing.

"In iodide of potassium we have, I believe, a remedy most potent—I might almost say infallible—in all cases of ulcer dependent upon syphilitic taint, if given in appropriate doses. The tertiary syphilitic ulcer is in my experience a very common one, and may be recognized by the peculiar 'cachectic' appearance of the sore, the worm-eaten margins, the thin, profuse discharge, and the want of all healthy granulation at the base of the ulcer. These ulcers affect especially the upper part of the leg, are not usually combined with varicose veins, occur in comparatively young subjects, and frequently recur again and again, as is shown by the thin cicatrices seen in their neighbourhood. The majority of these ulcers occur in women, and are traceable in most cases to infection from the husband, either directly, or, more often, indirectly through the *fœtus in utero*. In these cases there has often been no genital ulceration, no coppery eruption on the skin; but the patient gets out of health, has ulcers

on the extremities, and very generally aborts if she becomes pregnant. A very small dose of the syphilitic poison is sufficient to produce these ulcers, and I believe, though the point is one difficult to be sure about, that congenital syphilis may show itself in this way in comparatively early life, *i. e.*, between puberty and twenty. At least I have had more than one patient under my care with ulcers of the leg which rapidly healed under anti-syphilitic treatment, who strongly denied any personal infection.

"In order to derive marked and immediate benefit from the iodide of potassium in these cases, the ordinary 3 and 5-grain doses are useless, and it is essential to begin with 10-grain doses thrice daily in combination with an alkali, and to push it, if necessary, to 15, 20, or even 30-grain doses, though these latter are seldom necessary. Local mercurial treatment, in the form of yellow or black wash, or the white precipitate ointment, appears to hasten the healing of these ulcers; and their recurrence is, I have no doubt, due to non-persistence in the internal treatment until the patient's health is thoroughly restored.

"Arsenic is an invaluable remedy in those common cases in which chronic eczema is a concomitant, if not the antecedent, of the ulcer of the leg. In those cases where the skin is irritable and inflamed, and the epidermis dry and scaly, local treatment may be varied without end, and a cure will not be produced; whereas, if arsenic be given internally, the leg will rapidly improve, and the ulcer heal under any simple stimulant. My experience does not corroborate the rule laid down by Mr. Hunt, of limiting the dose of the liquor arsenicalis to five minims thrice daily. After a careful and extended trial of the medicine administered in this way, I have come to the conclusion that in many cases to produce a cure it is necessary to increase the dose to ten or fifteen minims, and to maintain this high rate until the constitutional symptoms of the drug are produced. The same rule holds in the treatment of ulcers, lupoid or otherwise, on other parts of the body, but I will confine my remarks at present to ulcers of the lower extremity. I am careful always to administer arsenic upon a full stomach, and I find a remarkable tonic effect produced by its exhibition."—*Practitioner*, Aug. 1869.

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36. *Amputation of the Scapula, along with Two-thirds of the Clavicle and the Remains of the Arm.*—Dr. Patrick Heron Watson records (*Edinburgh Medical Journal*, August, 1869) the following interesting case of this: J. R., æt. 13, engaged in a paper mill, had his left arm caught between two pinion wheels, and before the engine could be stopped he received a severe injury, for which he was admitted into the Royal Infirmary 27th March, 1869. Dr. W. deemed it expedient to at once place the patient (the boy) under chloroform, for the purpose of investigating the extent of the injury. "After the removal of his clothes, the arm was found to have been nipped off at the insertion of the deltoid, at which point the brachial artery and the accompanying nerves hung loosely from the end of the stump, the artery pulsating up to almost its fusiform extremity. The whole of the deltoid region, the entire axilla, one-half of the pectoral region, and more than one-half of the clavicle and dorsum scapulæ, were exposed, as in a superficial dissection of the muscles and fascia, entirely denuded of all cutaneous covering. The skin corresponding to these bared parts hung behind like a rag fenestrated with openings made by the teeth of the wheels. The aperture in the skin through which the remains of the arm protruded resembled the arm-hole of a vest, while the sound skin around this cutaneous aperture was so detached from its subjacent adhesions that the finger could be slipped beneath it for fully an inch all round. This detachment of the untorn skin diminished the likelihood of its retaining its vitality. To leave the stump of the arm as it was, was out of the question. To amputate at the shoulder-joint was to make things no better than they were. There was in fact no means by which a sound cicatrix could possibly be obtained, except by amputation of the scapula together with the clavicle and the fragment of the arm. Having placed the patient deeply under the influence of chloroform, I proceeded to operate. The patient, in the first instance, was laid upon his side so as to expose the dorsal aspect of the scapula. With a short amputating-knife I made an incision through the centre of the cutaneous open-

ing as far as the posterior costa of the scapula, and with a sweep of the knife upwards and downwards, while the cutaneous flaps were held back, exposed the whole dorsum scapulæ. Laying hold of the bone by its inferior angles, a single incision severed a portion of the trapezius, the rhomboids, and the levator anguli scapulæ. The superior angle thus exposed was drawn downwards and outwards, and the remains of the trapezius, with the other soft attachments of the upper costa, were at once divided. The trunk and branches of the posterior scapular and supra-scapular arteries were now secured. Lastly, the serratus magnus was cut away from its insertion into the under surface of the vertebral costa of the scapula.

"The remaining vessels which bled were secured as before. The patient was now laid on his back, and the skin divided along the clavicle, from which the muscles were detached by slipping the point of the knife along the upper and lower margins. Dividing the clavicle with the saw, just external to the costo-clavicular ligaments, I cut through the pectoralis, major and minor, and, clearing the axillary vessels, gave them to an assistant. And now, on laying hold of the scapula and arm, and drawing them outwards, a few touches of the knife enabled me to clear the remaining attachments of the bones above, so as to complete the separation with a single sweep of the blade towards the axilla. The axillary artery, the acromial and pectoral branches, were at once secured, and all bleeding ceased. There were upwards of twenty vessels tied in all, but certainly not more than two ounces of blood was lost during the operation. The ligatures employed had been previously prepared by soakage in a strong carbolic acid solution. The wound was now washed out with a similar but weaker solution of the acid in water (1 to 40). The horizontal incisions were united by wire sutures, and the anterior and posterior margins of the oval opening were brought together with a strain, by means of six points of interrupted suture. The whole cutaneous surface was again completely cleansed with the carbolic acid lotion, and covered with a plaster composed of one part of carbolic acid to seven of the emplastrum saponis spread upon lint. This was laid so as to adhere smoothly and closely to the surface for six inches in every direction beyond the divided parts, to the complete exclusion of air. The patient was now conveyed to bed, laid among blankets, surrounded with hot-water bottles, and ordered champagne and brandy, together with beef-tea or milk, as circumstances might direct. These were to be given in small quantities, and frequently, so as to diminish the risks of vomiting.

"*Vespere.*—There has been a good deal of vomiting from the effect of the chloroform. There has been neither bleeding nor oozing, though there is obviously fluid contained beneath the plaster. The pulse at the wrist is 117. He is warm and comfortable. To have ice, and to continue the soup and wine."

The patient was dismissed cured on the 11th of June. He was "seventy-four days under treatment; but throughout the whole of that period had no symptom calculated to excite anxiety as to his ultimate recovery. For nearly three weeks the discharge was copious, and undoubtedly purulent, and the usual effect of this continued drain, in the form of emaciation and anæmia, was markedly observed. The carbolized dressings were employed carefully, and daily applied by myself or house-surgeon up to the 18th of April (twenty-two days), by which date the cutaneous flaps were adherent to the parts beneath. A large exposed granulating surface, corresponding to the axilla, remained, however, unhealed. It presented a weak and flabby appearance, which was apparently unaffected for good by the continuance of the carbolic acid application. During the whole of this period there was, however, no fetor arising from the discharge, which was excluded from the action of the air by being covered by the carbolic paste. Any of the secretion which escaped from beneath the paste, and soaked the nest of carded tow upon which the left side was supported when the patient was lying in bed, became more or less tainted in the intervals of twenty-four hours, between the periods at which the dressing and tow were removed. The secretion from the raw surface had at first the aspect of sticky mucus, like that secreted from the bronchi. I have observed this in every instance where carbolized non-absorbent dressings are employed. The examination of this mucus-like secretion, by means of the microscope, has

uniformly shown it to consist of pus-corpuscles in a clear granular fluid. I have observed very much the same appearance in the instance of sores which, through a misapprehension on the part of the patient, have been dressed with the gutta-percha or oil-silk placed next to the skin, or where a cabbage-blade or docken leaf has been used as an application. In other cases, where the dressing has consisted of oil and carbolic acid, applied by means of lint, the carbolic acid has a transforming influence on the corpuscles, rendering them angular and shrivelled, while tha globules of oil sometimes obscure the field in such a degree as to render the recognition of any corpuscular elements impossible, until ether has been added to effect their removal.

"I have employed carbolic dressing according to the strictest methods of antisepticism in a very large number of cases of operation, using it in this way in manipulations and incisions when its use was restricted by others to its application as a putty to the occlusion of chronic abscesses after incision. I have made the applications myself, renewing them day by day, and I have carefully watched the effect. I have had no bias in favour of this plan, nor have I been prejudiced against it. I have simply employed it because it made great promises, and I have no hesitation in saying that I have been completely disappointed in my expectations. I admit that my expectations were high pitched. I acknowledge I did expect to meet with union by the first intention." * * *

Dr. W. is not inclined to accord any credit to the antiseptic treatment as having in any way assisted in the satisfactory result; he fears that it delayed the cicatrization of the granulating surface.

Dr. W. refers to the case of Dr. Stephen Rogers, and the tables given by him in the *American Journal of Medical Sciences* for October, 1868.

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37. *Paracentesis Thoracis*:—Prof. Kussmaul reports (*Deutsches Archives fur Klinische Medicin*, 4, 1868) sixteen cases in which the operations were performed for pleurisy, empyema, and pyopneumothorax. He says that the reason why the operation so often fails is, to a large extent, because an exact appreciation is not made of the circumstances in which it is most effective. One must have a clear idea of what one intends to do, and especially whether puncture or incision, or even resection of the ribs, may be the best proceeding. He is convinced from his experience that the operation, properly employed, is a most valuable addition to the resources of medicine.

Kussmaul relates the case of a boy of five years with a purulent effusion of three months' standing, and in whom suffocation was imminent. A fine trocar was introduced in the sixth intercostal space on a line with the nipple; greenish-yellow pus without smell escaped. In twenty-four hours 24 oz. of pus escaped through the canula without any entrance of air. The most striking improvement was observed. Pus was evacuated during six months through the tube. When the exit of pus was prevented by the valvular closure of the tube the patient invariably got worse, and was immediately benefited by a fresh evacuation. The patient was discharged in six months, but his parents did not sufficiently attend to the escape of the pus, and in three months he came back to the hospital. An iodine solution was then injected daily, and the secretion was much diminished. In four months' time he was discharged with a slight contraction of the left side, but otherwise in quite good health.

In the case of a child of eighteen months, with purulent effusion of four months' standing in the right pleura, a silver canula was introduced into the fifth intercostal space and fastened in. In five or six weeks the child was dismissed with considerable contraction of the right side, which, however, righted itself after some years.

In the third case there was pyopneumothorax following puerperal fever. There were great constitutional distress and dyspnœa, and also fetid expectoration and breath. An incision was made in the eighth intercostal space two inches from the spine; air passed out first, and then 100 ounces of stinking pus. The fever was much reduced. After the operation an elastic catheter six inches long was introduced. The pus passed out from this with each cough; if its exit was barred, feverishness at once occurred. The lung gradually assumed its proper size, the vesicular breathing was heard; as the secretion diminished,

the catheter was removed. The patient was cured in eight weeks after the operation.

In another case a girl of nineteen, whose family was phthisical, had double pneumonia and bronchitis, with extensive empyema of the right side; the left knee-joint and ankle were painful and swollen, and it seemed as if their inflammation was due to purulent infection. A puncture was made in the fifth intercostal space on a line with the nipple, and the wound kept open. The pus which flowed out soon became stinking; an elastic catheter was therefore introduced. So long as free discharge of the pus occurred, the joint affection disappeared, but returned if there was a stoppage. The wound was enlarged, and a bougie introduced to keep it open. Repeated injections of sulphite of soda and chamomile tea were introduced with the best effect upon the character of the pus. Some little time later injections of iodine were substituted. The patient now steadily improved, and in four and a half months from the operation was entirely cured.

The operative treatment of empyema in such cases as this is the more important, as experience has shown that absorption of the pus easily produces tubercle, especially in subjects who are predisposed to it.

In the so-called cases of *empyema necessitatis* the operation is yet more plainly required, and the prognosis is very favourable where it is done.—*Syd. Soc. Bienn. Retrosp.* 1869.

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38. *Traumatic Varicose Femoral Aneurism successfully treated by Ligature.*—JAMES SPENCE, Esq., relates (*Ed. Med. Journ.*, July, 1869) a case of this which he thinks worthy of publication as he can find no mention of any instance of traumatic varicose femoral aneurism which has been treated on the same principles, whilst the method of treatment generally recommended, and which has been hitherto almost invariably adopted in such aneurisms at the bend of the [illegible], seems to him to be inapplicable, or at least attended with grave risks in the case of the femoral.

The subject of the case was a youth 15 years of age, slender form, tall for his age, and delicate appearance, whom Mr. S. was called to see 26th March, 1868. He had, about three weeks previously been stabbed with a spear-pointed knife by a school fellow. Dr. Miller, who first saw him, found him lying on two chairs very pale and faint, in consequence of profuse hemorrhage issuing from a wound in the upper and anterior aspect of the right thigh. The wound, which extended obliquely upwards, was about three-quarters of an inch in length, and one inch and a half in depth. After stopping the hemorrhage and dressing the wound, I had him conveyed home in a cab. He progressed very favourably, and in ten days the wound had entirely healed, though the patient still continued weak. Perfect rest was still enjoined, but after a few days he could not be restrained from going out and walking about, though rendered lame by slight pain and stiffness of the tendons at the back of the limb, which, however, improved every day. He called on me on Monday, 23d inst., and stated that he had been to Leith on the previous Friday, that he had walked hurriedly home from the station, and for the first time felt 'a beating' in the part, but no pain. On examination, a little above the wound, I found a pulsating tumour, which I diagnosed as a false aneurism. He was ordered home, and enjoined perfect rest and quietness."

When examined by Mr. S. he found on the right thigh, a cicatrix as of a punctured wound, situated on the outer border of the sartorius muscle, five inches and eight lines below the middle of Poupart's ligament. Extending from the puncture there was a pulsating swelling, not very prominent, somewhat flattened, of an elongated oval form, two and a half inches long by one and three-quarter inches broad. About two inches of the swelling were on the proximal side of the wound, *i.e.*, towards Poupart's ligament, and about half an inch on the distal side. Besides this distinct pulsating tumour, there was also an undefined fulness on the inside of thigh, close up to Poupart's ligament, caused by the dilated femoral vein, and the upper part of internal saphena was also dilated. The aneurismal swelling at the wound was seen to pulsate, and the pulsation was very strong when the hand was placed on the tumour, and ac-

companied by a most peculiar thrill, almost startling, when first felt. On using the stethoscope, besides the "blowing" sound, there was also heard a loud buzzing or whizzing bruit, which has been not inaptly compared to the noise made by a "blue-bottle fly confined in a paper bag." This latter sound was so loud as to be heard even at a little distance, and without the stethoscope. The thrill and whizzing murmur extended upwards from the wound both in the aneurismal tumour, and also in the dilated femoral vein as high nearly as Poupart's ligament, but they were much less distinct in the lower part of the aneurism—only barely appreciable. The pulsations of the anterior and posterior tibial arteries seemed rather weaker than in the sound leg. The patient felt the limb somewhat cold, but the thermometer showed no difference in the actual temperature.

I directed that he should be kept perfectly quiet in bed, with the thigh flexed on the pelvis, and that graduated compression should be maintained upon the common femoral artery, at the brim of the pubes, where it emerges from the abdomen, by Carte's compressor, modified so that the pressure was made by means of a leaden weight instead of the full screw action. He was ordered to have a nutrient, non-stimulating diet, consisting of milk, with white of eggs, and farinaceous and a little animal food. Under this treatment the pulsations and bulk of the aneurism diminished, but I found that the compression, though as far as possible limited to the artery, interfered with the venous circulation, and gave rise to so much pain and swelling in the thigh, and irritation of the inguinal glands, that it was obliged to be abandoned. Ice was then applied, over the swelling and to the groin, and was beneficial in allaying the irritation resulting from the compression, but it had little effect on the aneurism; and I therefore determined to operate so soon as the local irritation was subdued

I had from the first contemplated the probability of an operation being required, and had carefully weighed in my mind what method of procedure I should adopt, and had decided to tie the superficial femoral above and below the aneurism without opening the sac. Accordingly, on the 8th of April, 1868, assisted by Drs. Dunsmure, Gillespie, Littlejohn, Taylor, and Mr. Miller, I proceeded to perform the operation I had planned. The patient being put under the influence of chloroform, I made an incision 7½ inches long, commencing about 2 inches below the middle of Poupart's ligament, and continued downwards in the course of the femoral artery. This incision passed over the long axis of the aneurism, and crossed the course of the sartorius muscle, so that I might reach the artery under the inner border of that muscle at the upper part, and under its outer margin at the lower part of the thigh. In making my incision I was careful to cut lightly over the tumour, so as not to divide more than the skin and fat. I next proceeded to clear the artery in the lower part of Scarpa's triangle. In doing so I found the parts more matted together and thickened, and the depth increased from the plastic and serous effusion to a much greater extent than the external appearances would have led me to expect. I required to take great care in clearing and drawing aside the inner edge of the sartorius, which, instead of being loosely connected as usual, was adherent. The sheath of the artery, however, was not so affected, and was readily recognized and carefully opened, and the artery cleared for passing the aneurism-needle. The vein much distended, was felt bulging under the artery. The armed needle was then carefully passed round the vessel, the ligature left *untied*, and the ends held by an assistant. I next proceeded to tie the femoral below the aneurism in Hunter's canal. The fascia over the outer edge of the sartorius was freely divided, and the edge of the muscle cleared. Here a difficulty occurred, not from adhesion of the margin of the muscle at the part cleared, but owing to the body of the muscle over the aneurism being blended with the tumour, and forming part of the false sac. I found I could not turn over the muscle or draw it aside, so as to expose the aponeurosis covering the artery, without using such force as would have endangered breaking up the limitation of the aneurism. I had, however, foreseen this difficulty, and accordingly I divided about half the breadth of the sartorius, so as to expose and reach the vessel, which here lay very deep, the depth being increased by the proximity of the aneurismal tumour, as I wished to tie the artery as close to that

as I could. When I had passed this ligature, I tied it firmly, and then proceeded to tie the upper ligature, which had also been applied as close as possible to the swelling. So soon as the upper ligature was tightened, all pulsation and sound ceased, and the appearance of tumour was almost effaced. The long wound was then closed by points of suture, a slip of dry lint placed over it, and retained by slips of adhesive plaster; the foot, leg, and knee were wrapped in cotton wadding, and the patient placed in bed, with the knee very slightly bent, and laid on its outside on a soft pillow.

When he recovered from the chloroform he was a little sick, and vomited. An opiate was administered. The milk and farinaceous diet was ordered to be continued. The patient progressed very favourably, and required little treatment, except medicine and enemata to act on the bowels, which were very constipated, so as to prevent straining at stool, and the wound healed well. No marked alteration in the temperature of the limb occurred after the first two days. On the twelfth day after the operation, the lower ligature came away when I was dressing the wound, and without any appearance of blood. Slightly stimulating lotions were used to wash the points of the wound which had not cicatrized, and support was given by strips of adhesive plaster. On the 26th four drachms of blood came away from the incision after straining at stool. Dr. Dunsmure, who visited him, enjoined quiet, cold to the wound, and, as his tongue was loaded, ordered him blue and compound rhubarb pill; and subsequently better diet, claret wine and iron. On the 11th May, Mr. S. found the patient looking very well, the wound healed, except at the ligature, which I found was lying loose, and therefore removed it. From this time nothing worthy of record occurred. He was allowed to walk at first with a crutch, and subsequently to use the limb. He was lame for some time owing to the stiffness of the knee, but this gradually disappeared, and he now uses the leg perfectly. For some time after the operation I directed him to use a flannel roller to support the venous circulation in the limb. The cicatrix was narrow and firm; not the slightest pulsation or bruit to be felt or heard, no appreciable venous congestion, and his general health excellent.

To-day (10th June, 1869) I examined Mr. K———. As already stated, the aneurism is thoroughly cured; not the slightest pulsation or thrill can be felt; but the appearance of the limb indicates some obstruction or alteration in the venous circulation of the part. The right thigh is greater in circumference by one inch than the left. The swelling is neither tense nor œdematous, but soft and elastic. The cicatrix is thinner and broader than it was eight months ago; whilst towards the groin numerous small superficial veins are seen dilated and slightly dilated and slightly tortuous; but the common femoral and great saphena veins, which were distended and varicose before the operation, seem now of their normal size.

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39. *Extirpation of the Parotid Gland for Cancer.*—Prof. OTTO WEBER relates (*Deutsche Klinik*, 1867) three cases in which he extirpated, as he believes, the entire parotid gland in cancer of that organ; and he appends some observations on the practicability and advisability of the operation. He differs equally with Allan Burns and Hyrtl, who teach that it is anatomically impossible to remove the whole gland, and with Busch, who teaches that extensive degenerations of the parotid are best left alone. He believes, on the contrary, that if the operation be properly performed, the bleeding is more easily commanded than in many operations of the neck; and although the *facial nerve must be divided, and paralysis of that side of the face ensue*, this is, in his opinion, only a trifling drawback if, as he believes, cancer may be extirpated, and a complete cure obtained. He thinks there need be little primary bleeding, if the vessels are secured as they are divided or exposed with two ligatures, one on either side; and that there will be no risk of secondary hemorrhage. In the operation he directs that the parotid should be laid bare by an incision parallel to the ascending ramus of the lower jaw, to be crossed, if necessary, by another incision. The external carotid may be tied and divided as it passes into the gland at an early period of the operation, if it can be seen; but he does not consider this necessary, nor will the ligature of this artery stop the hemor-

rhage from its branches. Ligature of the common carotid he dissuades as useless and dangerous. The proper fascia of the parotid is not to be divided if the whole gland is to be extirpated, nor should sharp hooks be inserted into it, since they easily tear this capsule. "In exposing the parotid we come first to the temporal artery below the zygoma, the anterior auricular in front of the meatus, and the transverse facial close beneath the articular condyle. It is better to expose all these vessels freely enough to be able to pass a double ligature around them with an aneurism needle before dividing them. At the under and posterior part the sterno-cleido-mastoid muscle comes into the way. If this is adherent, a part may be removed with the tumour. . . . Posterior to the parotid in cancerous tumours the occipital and posterior auricular artery and the auricularis magnus nerve usually require division—the latter may sometimes be spared. Having now got the tumour free on all sides, the operator seeks for the external carotid artery. In cancer I always advise to remove the gland as completely as possible. Hence it is necessary to divide the external carotid and the temporo-maxillary vein. These also are to be cut between two ligatures; the parotid is then to be freed and lifted from its bed with the finger, in doing which some force is occasionally necessary, but too much force should not be used, otherwise the joint or the carotid, if it has not yet been divided, may be torn into, in consequence of the closeness of the cellular connections. Before the parotid can be completely severed from the styloid process and the pharyngeal muscles, the internal maxillary and ascending pharyngeal arteries have to be divided. They will bleed even if the external carotid is secured, and therefore must be ligatured. The remains of the gland are then to be dissected with knife and scissors clean off the fascia covering the internal carotid artery and internal jugular vein. It is occasionally necessary to follow the tumour to the inside of the ramus of the jaw, as it spreads to the submaxillary gland, and in some unfavourable cases the latter is also affected. Here, also, the extraction of the gland with the finger is serviceable, and in such cases the facial and lingual arteries must also be tied. From twelve to sixteen ligatures are generally necessary, but the free use of the ligature spares blood and enables the operator to have a good view of the parts."

Three cases are given; in the first, the whole parotid having been extirpated, great deformity resulted from the drawing of the features. This was temporarily relieved by division of muscles on the other side. It is noticed that "trophic" inflammation of the eye followed on the division of the nerve, as it does on that of the trifacial, attributed to the dropping of the lower lid. The operation was performed in February. In October there was the commencement of return of the disease, when the account breaks off.

In the second case the tumour was very extensive, and in dissecting it out the pneumogastric nerve was exposed, but not injured. The joint was opened to a slight extent, the ninth nerve exposed, and the whole of the posterior edge of the jaw. The operation lasted one hour and a half. The patient was extremely weak and emaciated before the operation. He recovered, however, and derived much relief from it; but some swelling was noticed during the healing of the wound in the opposite parotid, and he died (not under Prof. Weber's observation) four months after the operation.

In the third case the tumour had been brought to ulceration by the repeated application of caustic before the patient was seen. In this case the tumour was of great size, involving the submaxillary gland and some of the lymphatic glands of the neck. The submaxillary gland was completely extirpated, the muscles arising from the styloid process removed in part, the transverse process of the atlas was completely exposed in the wound, the facial nerve divided, and the hypoglossal exposed, but the vagus was not seen. Twelve arteries and the temporo-maxillary vein were tied. The patient recovered completely, and was well as long as heard of, though much disfigured by the facial paralysis.

The paper concludes with a description of the malignant tumour in each of the above cases; and, as a contrast, the history is given of a non-malignant tumour extirpated from the parotid region, and commencing apparently in disease of one of the lymphatic glands which are found imbedded in the parotid.—*Syd. Soc. Bienn. Retrosp.* 1869.

40. *Strangulated Hernia, with Perforation of the Bowel, in which the Occlusion of the Aperture by Ligature was successfully adopted.*—Dr. PATRICK HERON WATSON records (*Edinburgh Med. Journ.*, July, 1869) a very interesting case of this. The subject of it, Miss W. was an active woman of spare habit, upwards of sixty years of age, who when seen by Dr. W. was in "a state of prostration bordering on collapse. The abdomen was tense and tender, the pulse still hard in stroke, becoming frequent in number, but small in volume, constant hiccough and vomiting, a flushed face, a dry tongue, a feeble whispering voice, and copious general diaphoresis. The hernial tumour which occupied the right femoral space was ovoid, lying along the line of Poupart's ligament, tense and tender to touch, the surface slightly reddened, and the cutaneous textures agglutinated to the parts beneath. Her history was one of old reducible hernia, for which she never wore a truss. She stated that when in Kettle, seventy-two hours previous to our visit, she felt the rupture start in her groin, occasioning pain and a sense of faintness; that she returned home immediately, and attempted to reduce the swelling, but without effect; that about 9 P.M. vomiting set in, and that ever since she had suffered from intense twisting anguish in the region of the umbilicus, with constant retching, and latterly hiccough. To relieve these symptoms she had taken aperient medicine, which had been ejected by vomiting, and had applied warm fomentations to the belly. . . .

"The condition of matters rendered an immediate recourse to operation imperative. Accordingly, having administered chloroform, I proceeded, with the assistance of Drs. Littlejohn and Bell, to operate in the usual manner. On opening the sac, a quantity of claret-coloured muddy fluid escaped, and on exposing the contents, which consisted only of bowel, and sponging its surface, we found it presented a dark-chocolate colour, with its glistening serous surface obscured by a white or rather ash-gray 'bloom.' The texture of the bowel was soft, and manifestly admitted of no rude handling. The probe-pointed bistoury was accordingly guided with the greatest gentleness beneath the stricture to the inner and anterior aspect of the neck of the sac, the bowel being protected by the fore and middle fingers, while the nail of the fore finger formed the director of the bistoury beneath the constricting ring. The slightest lever movement of the knife-handle made space so that the bowel became flaccid. On drawing gently upon the knuckle of intestine, it seemed adherent to the ring; but yielding to the gentle continued traction, an adhesion seemed to give way, and the knuckle of bowel came down. At the same moment, with a crack like a bubble of air bursting, a puff of fetid gas and a gush of fluid feculence escaped from the intestine on the level of the mouth of the sac. On washing the parts, the aperture of escape was found on the side of the bowel corresponding to the external aspect of the femoral ring, and close to the mesentery. It seemed like a transverse linear cut, a little more than a quarter of an inch in length, such as a thread might have made in the serous membrane, through which the ulcerated mucous and muscular coats along the whole line of constriction were obviously exposed. Puckering together the peritoneal coat with a pair of dissecting forceps from around the small aperture, I secured it with a ligature tied with a double knot which, while applied with sufficient firmness to prevent it slipping, was gently tightened so as to avoid further cutting by the ligature of the tender serous membrane.

"After again carefully cleansing the bowel, I returned it within the abdominal cavity; the ligature, however, was left hanging out through the wound. Further, the patency of the sac was secured by stitching its divided margins to the edges of the cutaneous incision. The dressing consisted of a pad of tow supported externally by a folded towel, and retained by a spica bandage. The patient was now laid in bed, with the limb on the affected side raised in the flexed position on pillows.

"A draught of 50 drops of laudanum was administered as soon as the effects of the chloroform had sufficiently passed off to admit of her swallowing; and a quarter of a grain of muriate of morphia in pill was ordered to be given repeatedly.

"Within four hours all painful symptoms had subsided; the patient had also enjoyed several quiet sleeps, and taken from time to time a single spoonful of

water or of milk. We desired that her food should consist of milk and beef-tea, with ice, but no solids ; and even of those fluid articles of nutrient, she should have no more than a mouthful at a time."

Ten days after the operation some fluid feculence escaped from the dressing, the ligature still, however, remained in the wound, which was beginning to granulate, the sloughing sac having separated. Twentieth day after operation the ligature came away on the dressing. No fecal discharge since tenth day. To have oat-meal gruel three times a day. On the twenty-seventh day the bowels acted spontaneously, for the first time since operation. On the 38th day the wound was soundly closed; and three weeks afterwards the patient had been restored to her usual health.

The most interesting feature in this case is the treatment of the aperture in the intestine. "Careful examination of the implicated portion of intestine," Mr. W. remarks, "led me to hope that its vitality was not wholly extinguished, but that, after the degree of long-continued constriction to which it had been subjected, its recovery was more likely to take place when lying within the cavity of the belly than if left exposed in the hernial sac. To return it into the aperture unclosed, admitting a free feculent escape, was of course out of the question ; but to close the opening as if it were a case of simply wounded intestine, was to run a risk of after fecal escape. Against a successful result there were, (1) the weakened vitality of the textures implicated, owing to the long period of strangulation, and the consequent ulceration of the mucous and muscular tissues of the bowel at the part requiring ligature of the serous coat; (2) the risk of fecal extravasation, in consequence of early separation of the ligature before any satisfactory agglutination of the parts implicated could take place; (3) the increased risk of a septic purulent peritonitis from the presence of a ligature, and, possibly, sphacelating bowel, within the cavity of the abdomen. In favour of a satisfactory result there were, (1) the position of the aperture in the constricted parts being, as we have seen, close to the mesenteric attachment; (2) the likelihood of an agglutinative peritonitis fixing the affected portion of bowel close to the mouth of the sac ; thus affording it efficient support, and a free external escape for pus or intestinal contents. The procedure by puckering up the serous coat from around the small opening is precisely what should be practised in cases of penetrating wounds of the abdomen, with punctured wound of the bowel, where the application of the ligature can be effected without diminishing the calibre of the intestine. The healthy condition of the viscus wounded in such circumstances makes the probabilities of success much greater than when the textures, long strangulated in a hernia, are subjected to ligature. This plan of treatment, as adapted to the circumstances of wound in the intestine contained in a hernia, was apparently first suggested by Sir A. Cooper, in the second edition of his work upon Hernia,[1] where he says, 'A small wound may be inflicted upon the gut by the knife of the operator. . . . . When this accident occurs, and the aperture in the gut is very small, the surgeon is to employ a different mode of treatment from that required for gangrened intestine. The aperture, with a small portion of the surrounding gut, should be pinched up with a pair of forceps, and a fine silk ligature, being passed round it, should be secured so as to include the ruptured spot; the intestine should then be returned to the mouth of the sac.' In the case given by Sir Astley in illustration of this practice, and upon which he seems to have operated himself, he states that, after tying the aperture with a ligature, he reduced the intestine, and closed the wound with five stitches and strapping. He says nothing, however, about cutting off both ends of the ligature close to the knot—an addition to his plan of procedure which finds its way into the works of both Mr. Teale[2] and Mr. Erichsen,[3] as if it were part of the original proposal.

"In the case I have narrated, I did not cut off the ligature close to the knot. Neither did I close the wound. In fact, I attached the divided margins of the sac to the edges of the cutaneous wound, so as to maintain a patent communi-

[1] 1st part, 2d ed., p. 45. [2] Teale on Hernia, p. 134.
[3] Erichsen's Science and Art of Surgery, vol. ii. p. 460.

cation with the cavity of the abdomen, and a free channel of escape for purulent or intestinal matters. The ligature I purposely left hanging out of the wound, that it might afford a guide for the feculence, should it escape. The wound itself was dressed simply with a pad of tow, retained by a spica bandage, so that no impediment might exist to a free fecal escape, should it come in quantity and with force, as is sometimes the case. No better commentary could be made upon the good effects of this mode of procedure, together with the careful restriction of diet to the smallest quantities of fluid nourishment, and the free administration of opiates, than to read by contrast Sir Astley's case, where the closure of the wound, the repeated administration of violent mercurial purgatives, and free bloodletting, were attended with violent fever, retention of urine, a tense and tender belly, great flatulent distension and delirium, relieved at once, when the stitches were cut out, by a copious discharge of pus from the wound.

"If there be one thing more than another in the treatment of a strangulated hernia after operation, which, next to early interference, conduces to the success of the result, it is the abstinence from the employment of purgatives, and the somewhat free administration of opiates. Here the patient's bowels were not opened for nearly four weeks after the operation, and then this result was spontaneous, unless the oatmeal food can be supposed to have conduced to have procured their evacuation. Till this evacuation she had no solid food of any kind. The patient was very hungry during a considerable period of her convalescence, and grumbled somewhat at the strictly-limited dietary. By diminishing the quantity of feculent material passing through the intestine, this meagre diet undoubtedly shortened the period during which the fecal fistula existed, while the progress of the reparative changes were at the same time not delayed.

"For the first week, Miss W. took a quarter of a grain of morphia every two or three hours; during the second week she had the same quantity thrice a day; during the third week she had a pill only at bedtime; and after that period it was discontinued. To the heroic practitioner of former times, to whom the early evacuation of the bowels after the operation seemed the great object to be sought after, such non-interference may seem foolishness, and, possibly, the idea may even suggest itself that the obstructed condition of the intestines may have favored the establishment of the fecal fistula. Were it so, the fecal discharge would not have ceased spontaneously before the bowels were moved, nor would it have lasted for only five days—a duration of flow which, with its very limited amount, points to the separation of the ligature as a source of the escape."

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41. *Herniotomy and Strictured Hernia during Infancy.*—Dr. RAVOTH has published in the *Berl. Klin. Wochenschr.* No. 46, 1868, the history of a case of incarcerated scrotal hernia occurring in a boy ten weeks old, in which an operation for the relief of the stricture was successfully performed. Dr. R. strongly urges in all cases of congenital hernia and in such also as occur in infancy, the application and the continual wearing of a proper suspensory bandage at as early a period as possible after the rupture is detected, in consequence of incarceration being of more frequent occurrence in young children than is generally supposed, and the fact that herniotomy is far less successful in infants than in those of a more advanced age. The opposition that has been made to the use of a proper truss in the case of rupture occurring in young children is, in Dr. R.'s opinion, entirely destitute of foundation.—*Centralblatt. f. d. Med. Wissenchaft.*, January, 1869. D. F. C.

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42. *Acupressure.*—Mr. JAMES F. WEST has published (*Brit. Med. Journal*, June 19, 1869) a table showing the results of acupressure in 19 important surgical operations, performed at Queen's College Hospital, within a period of twelve months. In only two of these cases did any bleeding follow its employment; one was a case of secondary amputation of the leg just below the knee in a delicate boy, aged 17, whose foot had been crushed by a wagon, and in whom sloughing of the leg followed; and the other was an amputation of the thigh by Teale's method for acute necrosis of the femur with suppuration in

the knee-joint, also in a boy, aged 13. In both cases, hemorrhage was arrested by pressure on the femoral artery, without any reapplication of the needles being necessary. In one instance the tourniquet, and in the other digital compression were used for the purpose, and both terminated favourably.

Out of the whole number, only two cases proved fatal, but in them the result was in no way due to hemorrhage. *post-mortem* examination in each case showed that the arteries had been firmly compressed by the needles, and that above the site of pressure coagula existed which blocked the arteries completely, and further there was no extravasation of blood between the flaps. Both patients died from shock; one was a case of double amputation of the lower extremities for a railway accident, which proved fatal in six hours; and the other was a case of amputation of the thigh through the trochanters, of a young strumous girl, who had been much reduced by profuse suppuration from a deep burn, and who never rallied from the effects of the operation, but sunk on the morning of the fourth day. The average length of time which elapsed before withdrawal of the needles was about fifty hours. Simple needles applied after Sir J. Simpson's first and fourth methods without ligature were used in all the cases.

Wounds appeared to heal more rapidly than where silken or hempen ligatures were employed; and a diminished amount of suppuration was manifest.

All these circumstances appear to Mr. W. to be in favour of acupressure as a means of arresting hemorrhage; and so strongly does he prefer it to the ligature, that he now employs it in almost every case of amputation of the limbs, and also in excision of the breast and ablation of tumours. He does not think that it can supersede the use of the ligature altogether, but has no doubt that it will be found a most efficient substitute for it in the majority of surgical operations.

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43. *Carbolic Acid as an Antiseptic Dressing.*—Dr. W. MacCormac, of Belfast, reports (*Dublin Quarterly Journ. Med. Science*, February, 1869) some interesting cases treated after Professor Lister's method. Among these are five cases of compound fracture and dislocation, one wound of the knee-joint in an intemperate man, æt. 45, one very severe injury to the wrist in a boy, and one amputation of thigh. The results were very encouraging. Dr. MacC. concludes his paper with the following observations:—

"The conclusions I am disposed to draw in respect to the surgical uses of carbolized dressings are, *first*, that by these means those conditions which promote the formation of pus are sometimes wholly prevented, at other times greatly diminished in power; and that when pus is found, it proves quite innocuous, not prone to decomposition, and not injuring the wounded surface with which it is in contact. *Secondly*, I think the amount of pus is diminished when suppuration does occur. *Thirdly*, I have been much struck by the absence of those results of serious injuries so apt to ensue, both in the neighbourhood of the wounded parts and constitutionally. I have observed, over and over again, the almost total absence of pain, inflammatory swelling, and surgical fever, where such might otherwise have been expected to occur. In extensive injuries, involving the deeper-seated parts, it has appeared to me, carbolized dressings being resorted to, that those structures heal more readily, and that the wound soon becomes merely superficial, a granulating surface closing in, and protecting the tissues beneath. When this result is attained, it then becomes no longer necessary to continue so rigidly the antiseptic treatment, and the wound may be treated like any ordinary superficial ulcer, with such applications as may appear best suited to promote healing, amongst which the carbolized lotion should occupy a high place. *Fourthly*, I am disposed to believe that pyæmia will become comparatively of rare occurrence; but to establish this as a certain fact will require a very long series of observations. The theory that Professor Lister offers to account for all this is one of great simplicity, and one which so far explains the facts observed; and, until one more satisfactory shall be offered, we are perhaps bound to accept it. However, be it true or false, by acting strictly in accordance with its requirements, the surgeon will, I believe, procure results which he could not otherwise anticipate. I think the candid and truly scientific manner in which Professor Lister has promulgated his discovery is deserving of great praise. It is now for surgeons to examine into his

claims in an impartial and scientific spirit. It is only, I would add in conclusion, by a largely extended and carefully contrasted experience that such claims can be fairly and sufficiently tested. For this reason I have come to the conclusion that the results at which I have hitherto been able to arrive, in respect of the uses of carbolic acid in antiseptic surgery, are deserving of the consideration of the readers of this journal."

OPHTHALMOLOGY.

44. *Occurrence of Amaurotic Amblyopia, long after the Injury, in Cases of Concussion of the Spinal Marrow.*—Prof. T. WHARTON JONES records (*Brit. Med. Journ.*, July 24, 1869) four cases of this kind. In these cases the failure of sight was not experienced until some considerable time after the injury, which Prof. J. observes would tend to show that the affection of the eyes arose from a disturbance of the circulation, and consequent impairment of nutrition, leading slowly to degeneration of structure of the optic nerve and retina. "The part of the sympathetic system," says Prof. J., "on which the healthy circulation in the eye and the due nutrition of the organ depend, has its roots in the spinal marrow in the region of the lower part of the neck and upper part of the back. Thence the nerve fibres pass to the sympathetic in the neck through the hypoglossal nerve and the anterior roots of the two last cervical and two or three uppermost dorsal spinal nerves. From the sympathetic in the neck, the internal carotid plexus arises, and from this are detached fibrils, which, having passed from the cranium into the orbit, enter the eyeball, and are distributed to the muscular walls of the arteries of its internal tunics. Through these fibrils the sympathetic governs the contractions of the walls[1] of the arteries, and so regulates the variations in the width of their calibre. Variations in the width of the arteries of an organ imply, it is to be remembered, modifications in the flow of blood in the part, independently of the general effect of the heart's action. Thus it is that the healthy circulation in the eyes and certain other parts of the head, and their due nutrition, depend on the integrity of the sympathetic nerves in the neck.

"Lesion of the sympathetic nerves in the neck is followed by such a disturbance of the circulation in the eye, and consequently such changes in the nutritive process, as to lead to degeneration of structure and impairment of function.

"In the cases which have been related, the roots of the sympathetic in the neck must necessarily have participated in the injury which the spinal marrow sustained from the concussion in the accidents, on which the failure of sight supervened. The effect has been the disturbance of the circulation in the optic nerves and the internal tunics of the eyes, from which the deteriorated nutrition, causing the impairment of sight, has directly resulted.

"That the eyes thus suffer from injury of the sympathetic nerves in the neck, the old experiments of Petit, and the more recent ones of Reid, Claude Bernard, Brown-Séquard, and many others have demonstrated. Section of the sympathetic in the neck of a dog, cat, or rabbit, in the experiments referred to, was followed by vascular congestion and disturbed nutrition of the eye of the same side, leading, in some cases, to destruction of the organ by penetrating ulceration, or even sloughing, of the cornea, and evacuation of the humours.

"The occurrence of inflammatory congestion of the eye after section of the sympathetic in the neck was, in the first edition of my work on *Ophthalmic Medicine and Surgery*, attributed to the consequent paralysis of the walls of the bloodvessels of the eye; and microscopical observations recorded in my

[1] The radiating muscular fibres of the iris are also under the government of the same part of the sympathetic nerve, being supplied with nerve-fibrils therefrom. But this is a point which does not immediately belong to our present subject.

essay on the *State of the Blood and the Bloodvessels in Inflammation*, published in 1850, showed, in illustration and corroboration of this view, that section of the ischiatic nerve in the frog, *which contains*, mixed up with the ordinary sensitive and motor fibrils, *the sympathetic filaments* which are distributed to the arteries of the limbs, was followed by dilatation of the arteries, with a fuller and more rapid circulation in the web. The blood in the capillaries and veins being, at the same time, unusually loaded with red corpuscles, the general effect to the naked eye was increased redness, not only of the web, but of the whole limb.[1] An eventful result was opacity of the web, indicating an altered state of nutrition.

"In the cases related in the first part of this paper, the eyes, though seriously impaired in function, have not suffered disorganization such as was observed in the animals subjected to the experiment of dividing the trunk of the sympathetic in the neck. In the latter cases, the influence of the sympathetic on the circulation in the eye was completely cut off. In the former, the injury to the sympathetic, from the concussion of the spinal marrow, has been such only as to impair and pervert its influence on the circulation in the eye. It is to be remarked that the subjective symptoms which first attract notice in such cases may exist for some time without any material alteration of structure being distinctly observable under the ophthalmoscope. It is also to be remarked, in conclusion, that the inability which the patients laboured under to exert their sight for any ordinary length of time, which accompanied the amaurotic failure of sight, was different from the common form of asthenopia. The inability to exert the sight was owing, partly, to the irritable congested state of the eyes, and was, partly, one manifestation, among others, of the impaired energy of the body—sense and mind generally—which we saw to be a characteristic of all the cases which have been passed under review."

45. *Imperfect Vision and Loss of Perception of Colour following Apoplexy.*—Prof. QUAGLINO describes the case of a Turin banker, who had an attack of apoplexy in his 54th year. After some days he recovered consciousness, but was completely blind and paralyzed on the left side. The hemiplegia disappeared gradually, and the sight was restored so far that, when seen by the author a year after the attack, he could read the smallest characters, and, to use his own words, could see the sparrows on the tops of the trees. His vision was, however, very imperfect for all objects situated on his left, the images of which would fall on the right side of either retina, and he had totally lost all perception of colour. All faces appeared to him pale and blanched, and he could distinguish nothing but white and black. He had also entirely lost the power of recalling the appearances of things or people by any effort of the mind.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Giornale d'Oftalmologia Italiano.*

46. *Important New Application of Calabar Bean.*—T. WHARTON JONES, Esq., relates (*Practitioner*, Sept. 1869) the following case, which he thinks introduces a new resource in the treatment of paralysis of the third nerve, and suggests interesting considerations as to the true physiological action of the Calabar bean. A widow, æt. 41, was attacked, after exposure to a draught of air, with complete paralysis of the third nerve of a rheumatic character. The patient could not raise the upper lid, nor turn the left eyeball towards the nose, nor move it upwards or downwards; the pupil was in a middle state of dilata-

[1] In 1852, Dr. Claude Bernard, in repeating the old experiment of cutting the sympathetic nerve in the neck of a cat or rabbit, discovered that, in addition to the effects on the pupil and on the circulation in the eye previously known, there supervened redness and heat of the ear and side of the head. Dr. Brown-Séquard, having cut the sympathetic in the neck, galvanized the end of the nerve above the section, and found that the increased redness and heat of the ear and side of the head were thereby diminished. The effect was owing to constriction of the arteries, in consequence of their circular muscular fibres having been excited to contraction by the stimulation to which the sympathetic was subjected by the galvanism.

tion, and did not contract on stimulus of light. She complained of pain over eyebrow, in the temple, and side of the head. Mr. J. dropped a solution of atropia into the left eye, for testing the action of this agent on the dilator pupillæ. After the effect of the atropia had gone off she was admitted into the University College Hospital, and put on a good diet, and ordered a pill containing 1 grain calomel, ½ grain extract of colchicum, and 2½ grains of Dover's powder. Mr. J. on the 31st May, dropped a solution of Calabar bean on the affected eye, with the view of testing its action on the paralyzed sphincter pupillæ. "On the 2d of June, the action of the Calabar bean on the pupil had passed off, but it was found that the patient had acquired some slight power over the upper eyelid, so as to raise it a little by a strong effort. Seeing this, I repeated the application of the Calabar bean, as above mentioned, and discontinued the other treatment. . . . .

"On the 4th of June the patient could raise the upper eyelid a little more. The Calabar bean drops were accordingly repeated, and continued thereafter three times a week. Under this treatment I found at every visit I made to the hospital that the power over the levator palpebræ had increased.

"On the 14th of June the report states that the patient could raise the upper eyelid sufficiently for the purposes of vision, and that she could move the eyeball both inwards and upwards, but only a little downwards. There was still double vision.

"By the 21st of June the patient had acquired nearly complete command over all the muscles of the eyeball, except the inferior rectus, and could raise the upper eyelid as well as that of the right side, and there was but slight diplopia.

"On June 28, it is reported that Mrs. W. could raise the left upper eyelid well, could turn the eyeball towards the nose and upwards well, but could not quite fully turn the eyeball downwards. On looking downwards, therefore, she saw double.

"June 30, all the movements of the eye perfect, and no double vision, except in a slight degree on looking downwards. In regard to the pupil, it is to be remarked that it became contracted to the size of a pin's head at the usual interval after each application of the Calabar bean, but again returned to the previous middle state when the influence of that agent had as usual passed off.

"The sphincter pupillæ has not, like the levator palpebræ and muscles of the eyeball supplied by the third nerve, as yet regained its power permanently, so as to contract under the influence of the action of the light on the retina. It is to be noted that the pupil of the right eye is in a nearly similar state, being but little movable under the stimulus of light. The adjusting power for the vision of near objects is impaired in both eyes, so that the patient requires the help of convex glasses sixteen inches' focus to read with. The sight has otherwise remained good.

"The history of the above case, taken together with some further observations and experiments which I have made, throws light, not merely on the action of Calabar bean, but on the nature of the very interesting antagonism which exists between the effects of the latter and those of atropia. In the first place, I shall relate, as a clinical supplement to this example of the action of Calabar bean, an interesting experiment with atropia in a case of paralysis of the external rectus, depending, probably, on some intra-cranial affection. I was led to try this remedy by the consideration that the sixth nerve, which supplies the external rectus, is very closely connected with the sympathetic, and that the action of atropia is probably upon the latter. The patient had been some time under treatment, and under the use of iron and nux vomica his general health and strength had greatly improved, and the paralysis of the external rectus had considerably diminished. This case, being of probably intra-cranial origin, was likely to be less amenable to *local* treatment than the other. As soon, however, as I began to drop atropia (gr. iv—℥j) into the eye, the progress of the external rectus towards recovery was strikingly hastened, and all other treatment was discontinued, as unnecessary. This observation, together with the case first related, seems to point clearly to an antagonism between the two drugs, as regards effects upon the eye; atropia stimulating the sympathetic, Calabar bean the third nerve. This is not the whole of the antagonism,

however, between the two agents.[1] I have made a series of observations upon the circulation of the frog's web and of the rabbit's ear, as affected by the local application of Calabar bean and atropine respectively, from which the important circumstance appears clearly made out, that *while atropine contracts the arteries, Calabar bean contracts the veins.*"

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47. *Atropia in Keratitis.*—Dr. Sichel protests (*Annales d'Oculistique*, 1868) strongly against what he terms the abuse of collyria containing atropia, in cases of keratitis, in which he thinks atropia is not needed, and in cases of iritis, in which its use is permitted to supersede the necessary and rational antiphlogistic treatment with which it should be combined. He places great stress also upon the method of applying collyria, saying that a drop should be inserted between the lids by means of a soft camel's hair pencil, and at the outer angle. The drop will then follow the course of the tears, and will be diffused over the eyeball before reaching the puncta. The strong collyria with atropine, now so much employed, and often thrown carelessly into the inner angle, are accused by the author of causing grave symptoms of poisoning, by their escape down the lachrymal passages into the nose and pharynx. That they should at least be used with due caution is shown by Dr. Nieberg (*Bull. de Thérapeutique*, 1867), who relates the case of a girl of sixteen, with cataracts, to whom he gave a phial containing half a grain of sulphate of atropia dissolved in a little water, with directions to apply a drop or two while he saw other patients. By some error, the whole quantity was applied to the eyes in the course of ten minutes, and acute symptoms of poisoning were speedily manifested. Morphia was injected subcutaneously, and cold lotions applied to the head. After four injections the symptoms were abated, and by the next day the patient had recovered. —*Syd. Soc. Bienn. Retrosp.* 1869.

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48. *Exophthalmic Goitre.*—An important contribution to the clinical history of exophthalmic goitre was made by Dr. W. B. Cheadle to the Harveian Society. Dr. C. has met with eight cases of this disease during the last eighteen months, and of these six exhibited its three leading features, viz., palpitation, enlargement of the thyroid, and prominence of the eyeballs, in a marked degree. In the two remaining cases, one of the three great symptoms was absent; in one there was no goitre, and in the other no exophthalmus. Seven of the cases occurred in females, and one only in a male. In the latter, no cause could be discovered on most careful and repeated inquiry which would account for the attack. Of the seven cases occurring in females, four were associated with disordered menstruation, one with the advent of puberty, and one with the final cessation of the catamenia. Five of the women were anæmic, although not in any extreme degree; but the remaining two, and the man, were full-blooded and robust. In every case palpitation was the first, or one of the first symptoms noticed, and the action of the heart always rapid and forcible. The pulse was generally full and jerking, and ranged between 84 and 144, being, however, rarely found in any instance below 100, although showing great fluctuations between the limits. The temperature had been carefully registered in most of the cases, and found to be generally above the normal, in one case as high as 101°, showing, however, like the pulse, considerable variation. In one case, which had been under observation for above a year, although recovery had

[1] We learn from Mr. Jones that his opinion is in favour of a complete physiological antagonism between Calabar bean and atropia; an antagonism which is much more direct than that between atropine and morphia, which seems largely accidental, while the opposition between atropine and Calabar bean is essential and specific. This idea certainly agrees very well with the results of our own experience. The antagonism between Calabar bean and atropine has been recognized by Dr. Fraser. We may mention that more than three years ago, in a series of experiments on dogs, which were unavoidably broken off sooner than we wished, it was impressed on our mind that these two substances were opposed as regards most if not all of their actions, and in a toxicological point of view were probably antidotes of each other.—Ed. Pract.

appeared to be almost complete for some months, the pulse remained above 100, and the temperature about 99°. Observations were made to determine whether any difference existed between the temperature of the cheek and that of the axilla, or between the two cheeks, with the view of obtaining evidence respecting any affection of the cervical sympathetic. The results showed a general difference of half a degree in favour of the axilla, and corresponded with those obtained from persons in perfect health. In one case, however, the temperature of the cheeks was found to be two degrees lower than that of the axilla. This was observed twice only, the temperature having the normal relations as in the others, on all other occasions. In no instance was any material difference between the two sides of the body discovered, either in the cheeks or axilla. The pupils were found to be somewhat dilated, but responded readily to light and atropine, except in one instance, where there had been severe inflammation of both eyes. The impulse of the heart was always increased, and accompanied by arterial throbbing. In no case could hypertrophy or distinct organic disease be made out.

Amongst other symptoms observed in the majority of cases were irritability of temper, great nervous excitability, flushing of the face, and increased palpitation on the smallest excitement or exercise, epistaxis or diarrhœa, and profuse perspirations. In the case of the man, all the three principal symptoms were strongly marked, and the pressure of the goitre produced grave dyspnœa. The circumference of the neck measured 17½ inches. Iodine and glycerine were applied under oiled silk, and ten-minim doses of the tincture of iodine given internally. The goitre rapidly decreased in size, all the symptoms abated, and the neck was eventually reduced to a circumference of 13¾ inches. The iodine was given internally for nine months, with short intermissions only from non-attendance, without producing any increased palpitation or other ill effect. A second case, in which the goitre was large, and the other symptoms severe, was treated in the same manner with equal success. In one case only out of six in which iodine was given continuously for many weeks, it was deemed necessary to discontinue its use on account of increased palpitation following the administration of fifteen-minim doses.

In considering the bearing of the evidence afforded by these cases upon the nature of the disease, the author observed that increased action of the heart was not only an invariable symptom, but also one of the earliest in point of time, as in the cases related. If the sequence were real, the congestion or hypertrophy of the orbital cushions and thyroid might be explained as a result of hyperæmia from increased cardiac and arterial action. But the case of injury to the cervical sympathetic lately brought before the Medico-Chirurgical Society by Dr. W. Ogle seemed to show that mere hyperæmia was not sufficient. There must be something in addition, a nerve stimulus which at the same time sets the heart going at such an unwonted pace. The excessive cardiac action being viewed as the key to the series of phenomena, it was necessary to go a step further back, and seek the nerve source of this.

The author considered the morbid changes found in the cervical sympathetic on post-mortem examination, in a number of cases during the last few years, quite inadequate to explain all the phenomena observed. If the cervical portion of the ganglionic system were alone affected, it was, *primâ facie*, improbable that both chains should be implicated at the outset in every case. These chains had been shown by experiment to have singularly independent action; and yet, in the cases observed, no difference of temperature between the sides, such as lesion of one chain would produce, could be detected. Nor was there any disparity between the cheek and axilla, except casually in one case, showing that the morbid condition, whatever it might be, was not limited to one chain of ganglia only, or to the cervical portion only.

The symptoms of exophthalmic goitre corresponded partly to paralysis, and partly to irritation of the sympathetic. The increased heat and arterial action were consistent with the former, the cardiac excitement, the exophthalmus, and the dilatation of the pupil with the latter. Symptoms indicative of such opposite conditions were difficult to reconcile; but they appeared to show that the sympathetic system was in some way or other largely implicated.

The rapid, jerking pulse, persistent palpitation without organic disease of the heart, or acute disease, to account for it, and perhaps increased temperature, were suggested as valuable aids towards the diagnosis of the complaint in its early stages; and some sphygmographic tracings were exhibited illustrative of the difference of the pulse in this disease and in simple anæmia.—*Lancet*, June 19, 1869.

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49. *Alterations of the Retina, and the Choroid in the Tubercular Diathesis.*—Dr. Galezowski propounds the following statements: 1. In the first group of changes he ranks those alterations of nutrition in the retina which may exist in chronic phthisis, and which seem to depend upon interference with the circulation. Some consumptives have momentary difficulties of sight sometimes after cough, and examination with the ophthalmoscope generally shows engorgement of the retinal veins. It seems to be generally most strongly marked in the eye on the same side as the lung most affected. 2. The second set of changes are observed in the optic papilla when tubercular meningitis is set up. The central vessels become tortuous and masked at the border of the disk; sometimes they are not much changed, only their edges are a little concealed by surrounding exudation from vessels which are ruptured here and there. The first kind of appearance characterizes optic neuritis, the second perineuritis. 3. Finally, the author mentions cases like those recorded by Auvray and Cohnheim, of tubercular granulations in the choroid. The ophthalmoscope shows spots or white nodules regularly rounded and without any pigment. Cohnheim never found tubercles in the choroid, except in subjects who have died of tuberculosis. Galezowski has observed them in the living subject in chronic phthisis.—*Bienn. Retrosp. Syd. Soc.*, 1869, from *Gaz. Méd. de Paris*, 1868.

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50. *Extraction of Senile Cataract.*—The relative merit of Von Graefe's and other methods of extracting senile cataracts has occasioned lively controversy. Dr. Steffan, of Frankfort-on-the-Maine, gives his own experience and researches, which are worthy of notice. Dr. S. commenced independent practice as an oculist in 1861. The treatise of Schuft had then just appeared, advocating his method of scoop extraction. Von Graefe had been led to the linear section, because he considered the flap to be in itself a source of danger. Steffan determined to adopt Schuft's method, and practised it in 27 cases, which led him to results perhaps all the more valuable because the smallness of the number was favourable to careful and continued observation. He departed in two respects from Schuft's procedure. Except in 3 cases, he made the iridectomy before extraction. The section was 3½ or 4 lines long instead of 3, a change that could not fail to render the results more favourable. The operation was well completed 19 times. In 5 cases an escape of vitreous followed the lens. Twice, portions of the cortex were left behind. Once, vitreous escaped with the lens and with the remains of cortex. Of 14 operations completed without accident, 11 patients read No. 1 (Jäger), one No. 4, one No. 15 (pre-existent amblyopia and strabismus), and could only count fingers (pre-existent disseminated choroiditis and myopia). The other 13 operations were followed by inflammation. Five patients were enabled by a subsequent iridectomy to read at least No. 15; 4 had only quantitative perception of light, and 4 were perfectly blind. There were thus 8 complete failures in 27 cases, or 29.6 per cent. Results so unfortunate had determined the author to practise flap extraction, when he became acquainted with the writings of Messrs. Bowman and Critchett. The English method offered two positive advantages, a larger section (4½ to 5 lines), and a smaller scoop. Bowman's results were 8.4 per cent. of failures, and a further 9 per cent. of defective cures. Von Graefe obtained, by Critchett's method, in 118 cases, 7 complete failures, and 4 others nearly complete; while in 1600 flap extractions he had had 7 per cent. of failures, and since his use of the compressive bandage only 5 per cent. Dr. Steffan practised Critchett's operation in 13 cases of senile cataracts with hard nuclei, 3 times with concomitant iridectomy, 9 times with iridectomy at least six weeks before extraction. The operation was normal nine times; twice there was escape of vitreous, once before the lens, once following it. In two cases

portions or cortex were left behind. The recovery was uninterrupted in 7 cases, and in 6 there was inflammation. Six patients were enabled to read No. 1, one No. 6; one gained nothing, on account of atrophy of the optic nerve, although the operation succeeded surgically; 3 were conducted to a moderately good result by consecutive iridectomy; and in 2 the operation was useless. These results, together with his investigations, caused the author to fall back definitely upon flap extraction.

In order that a senile cataract may not injure, in its passage, the lips of the section, it is necessary for this to have a form and extent in accordance with that of the nucleus to be removed. Daviel (1747) took two-thirds of the circumference of the cornea. Richter, about 1770, had the merit of fixing the extent at that of half the circumference, a rule that the most eminent practitioners have observed down to our own day. Arlt was the first who gave (1850) precise measurements of the cornea, of the section, of the thickness of the cornea, and of the size of a normal lens. Writers following Arlt, and giving linear dimensions, omitted all mention of the thickness of the lens. Dr. Steffan sought to supply the omission by measuring the nuclei of 20 cataracts. He found as a maximum a diameter of from 3¾ to 4 lines, and an axial thickness of from 1¾ to 2 lines, so that a hard cataract may be of dimensions equal to those of a normal lens. This happens in cataracts with horny cortex, and also in complete cataracts with tardy softening. Such cases are met with in advanced life, towards the seventieth year. Most of the nuclei of hard cataracts have mean dimensions from 3 to 3½ lines of diameter, from 1 to 1½ of thickness. Small nuclei, of less diameter than 3 lines, and less thickness than 1 line, are uncommon and difficult to diagnosticate. Thus the thickness of a cataract is nearly half its diameter, and should be taken into account in the corneal section.

On considering what occurs at the time of exit of the lens from the eye, it becomes evident that the flap should have a height at least equal to the thickness of the cataract; and since the thickness of the cornea makes the internal wound smaller than the external, the puncture and counter-puncture should fall at least half a line outside of the transparent corneal margin. Only under such conditions can the cataract escape without injury to the lips of the wound. It is also evident that the convex part of the section should reach at least to the corneal margin, for an incision directed forwards, and for a cataract of maximum size. It might fall a little within the cornea if the size of the cataract were less. Since the author has adopted this manner of operating, his success has been more uniform than he could have hoped. He finds no source of danger in the flap itself, and therefore cannot assent to the principle on which Von Graefe based his linear section. The flap may produce suppuration, but so also may the linear section, or even a puncture or abrasion of the cornea. In nineteen operations without chloroform, and with iridectomy, either prior to or at the same time as the extraction, only once was there any complication. The section had been made too small, and it was necessary to extract the lens with Critchett's scoop. Escape of vitreous and some bruising of the iris were followed by irido-choroiditis and atrophy. In 4 cases there was slight irritation, with formation of secondary cataract. Fourteen patients read No. 1, one read No. 4, and three read only large type. These were cases of pre-existent irido-cyclitis.

In considering the sections adopted by different authors, Steffan observes that the height of the flap is commonly sufficient, but its base too narrow. The improvement of placing the section outside the cornea is due to Jacobson; but the influence attributed to marasmus is probably due to want of correspondence between the extent of the section and the size of the cataract. Corneal wounds, if cleanly cut, heal as well as wounds in the sclerotic, but only in the sclerotic can perfect cleanness be insured.

With regard to the value of linear corneal sections in hard cataract, Steffan points out that Schuft employed a section having three lines of external length. How could a cataract of mean dimensions (3 to 3½ lines in diameter and 1 to 1½ in thickness), supported by a bulky scoop, be removed through such an opening without injury? It is not surprising that Mooren lost 31.25 per cent. of

his cases, and Steffan himself 29.6 per cent., although his section extended to a fourth of the circumference of the cornea—that is, to an external length of 3½ or 4 lines, and an internal length of 3 lines. Such a section might suffice for small cataracts, but how can we ascertain the size with certainty? It is always a necessary precaution to make a somewhat larger section than the cataract seems to demand. Bowman and Critchett, indeed, make a section 4½ or 5 lines long externally, and 3¾ or 4 internally, corresponding to the diameter of large nuclei; but the axial thickness, in passing through the wound, shortens the section. It is, therefore, not surprising that those who have followed this method have lost many cases. It is the same with Von Graefe's section. Its length, 4½ or 4¾ lines externally, 4 lines internally, will not permit the easy passage of a nucleus of from 3 to 4 lines in diameter, and from 1 to 2 lines in thickness. V. Graefe, however, now attaches great importance to the exit of the lens by pressure alone, without the introduction of a traction instrument. He prescribes a height of half a line for the flap, if it be wished to pass such an instrument, in cases where the lens cannot be made to glide out; but he condemns the principle of giving greater height to the flap as a means of avoiding contusion. Steffan differs from him upon this point, and believes that this contusion is fraught with evils. He gives the flap a height commensurate with the thickness of the cataract.

In order to make the flap easily and with safety, it is necessary that, after puncture and counter-puncture, the simple advancement of the knife should give the desired section. It is therefore necessary that the blade should increase regularly from point to base, to avoid any loss of aqueous; that the back should be thin, but blunt, in a straight line; and that the point should be two-edged. These conditions were clearly stated by Richter in 1773. He fixed the maximum of width at 3 lines, or half the corneal diameter. His knife is figured with a cutting edge slightly convex, but this is not mentioned in the description. Zehender[1] has supplied the deficiency, and has described the best possible knife, except that its dimensions are fixed arbitrarily. The width of the knife should depend upon the height of the flap, estimated from the exterior when the section is made at one *coup*, and from the interior when a bridge of tissue is left at the summit for division during the withdrawal of the blade. This method is considered by Steffan to be the safest; and he therefore recommends a width of blade of from 1½ to 2 lines for cataracts of the same thickness. With this he obtains a section of proper size interiorly, and divides the central bridge in drawing back the knife, with its edge directed somewhat forward. The aqueous humour is thus permitted to escape gradually, and the section is completely under a minimum of intra-ocular pressure. Either Zehender's knife may be used, with its width diminished to 1½ or 2 lines, or Von Graefe's, increased to the same dimensions.

With regard to the conjunctival flap, Steffan thinks that it occasions hemorrhage, and that it is of no value in preventing suppuration.

That the performance of iridectomy should be the rule will be manifest if we consider the distension of the pupil required for the passage of the nucleus. Atropia cannot prevent bruising, because the pupil always contracts as the aqueous humour escapes. Moreover, the sphincter causes the iris to retain portions of cortex, and also to conceal them. All these inconveniences are avoided by an iridectomy made prior to the exit of the lens, and either as part of the extraction or six weeks earlier. Steffan sees no objection to combining the two procedures, and thus avoiding the risk of any want of correspondence between the size of the artificial pupil and that of the cataract. He sees no danger in the passage of the lens over the freshly-cut surfaces of the iris.

With regard to pathological deposits in the capsule after extraction, Steffan dissents entirely from Von Graefe's view that they depend upon a proliferation of intra-capsular cells. He refers them entirely to irritation of the iris, saying that no iridectomy will permit the passage of the nucleus wholly without bruising; and that hence arises an exudation which, together with the remains of

[1] Ophthalmic Review, April, 1864.

cortex and fragments of coagula, suffices to explain the presence of the fine membranes that form secondary cataract. He objects to the systematic removal of the capsule, notwithstanding the experience of Wecker and of Pagenstecher, and thinks that the excellent vision obtained in successful cases does not justify the surgeon in incurring the risks of the method. If it be important to get rid of capsule, he prefers to open the posterior capsule, after the manner of Von Hasner, after the exit of the lens.—*Syd. Soc. Bienn. Retrosp.*, 1869, from *Erfahrungen und Studien* über die Staar-operation, im *Zeitraum* der Jahra, 1861–7, Erlangen, 1867.

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51. *Operations on the Iris.*—Mr. NUNNELEY, in his address on Surgery before the British Medical Association at the meeting in July last, makes the following remarks, which are well worthy of attention:—

"Of all the tissues of the eye with which an undue liberty has been taken, almost as though it had been uselessly placed in the organ, is, I think, the iris, which, if it could complain, would, I suspect, with some justice do so. Its physiological value seems to have been unduly ignored; and, in more than one kind of operation, it is now ruthlessly, and, I fear, sometimes unnecessarily, destroyed. Thirty or forty years ago our best and most successful ophthalmic surgeons rarely touched it, if they could avoid it. Now it would appear as though it could not be too frequently excised or torn away, whether it be healthy or diseased. Experience must determine which of the two proceedings is the best; but I must own to my judgment—perhaps some of my hearers may be disposed to exclaim, 'Your prejudice'—inclining me rather towards the earlier than the more modern proceeding."[1]

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52. *Emphysema of the Eyelids.*—VAN DIEREN relates, in the *Nederl. Arch. Voor Geneesen Natuurkunde*, Vol. IV., the case of a young countryman, who, after receiving a blow upon the nose from the fist of a comrade, causing a profuse nasal hemorrhage, on attempting to clear his nostrils by blowing, there suddenly took place a swelling of both the lids of the left eye, completely closing it, and destroying entirely its sight. When seen by the surgeon, there was an extensive tense intumescence of the lids of the left eye, which to the touch gave the sensation of its being the result of emphysema. The tumour was not tender to the touch, save at a spot near to the inner angle of the eye. By gentle pressure upon the swollen lids, directed towards the nose, the intumescence could be dispersed, but would again shortly return upon the patient blowing his nose with the least force. It was ascertained that the ball of the eye was uninjured, but a fracture was detected of one of the bony processes in the neighbourhood of nasal cavity. The patient recovered under the application of a compress over the eye, and by a careful avoidance on his part of any but the slightest effort to clear out his nostrils by blowing. Two cases similar to the above are recorded by R. Taylor and Laurence. In the first of these, the emphysema of the palpebra was supposed to be the result of a rupture of the lachrymal sac.—*Centralblatt f. d. Medicinish. Wissenschaft.*, June, 1869, No. 30. D. F. C.

MIDWIFERY.

53. *Decidua Menstrualis.*—Dr. HAUSMANN gives an historical review of the researches hitherto made on this subject. He says he has never observed an entire cast of the uterine cavity, the membrane having always been expelled in

[1] Let me not be understood as decrying operations for detaching adhesions of the iris when they will not otherwise yield to treatment, or operations for artificial pupil when necessary, or even excision of a portion of the iris when it has been lacerated or bruised in cataract operations, but rather to the frequent removal of large portions of the iris in extraction of the lens, and in glaucoma, when the objects to be achieved can be equally well attained without such destruction of important tissue.

three or four pieces. The membranes were from 1 to 4 centim. long, of variable width, and usually thinner at the margin of transition from the anterior to the posterior walls of the cavity, at times only hanging together by a few shreds. The inner wall showed a smooth surface, and upon more minute examination several crossing forks, already described by Follin, inclosing, when recent, in their midst deeply red areas. These last, as well as partially translucent spots, depend upon an unequal thickness of the detached mucous membrane, as may be easily seen by sections made through these spots. Within these larger crossings the inner surface shows a number of punctate small openings, which are the expanded mouths of the uterine glands, an appearance which made Hunter call the membrane the *membrana cribrosa*. The outer surface was rough from hanging shreds. The microscope made manifest the uterine glands accompanied by capillary network; broad rounded cells, mostly having a large nucleus and a nucleolus, which sometimes was elongated and pointed at one or both ends, giving a spindle shape. With these cells were a few free nuclei, and near the outer surface was an abundant, loose, fibrous connective tissue.

As to the origin of this casting of the uterine mucous membrane, Dr. Hausmann contends that they are the result of impregnation. He disputes the statement that the membrane is shed every four weeks; he says the casts commonly occur after intervals longer than ordinary; that they occur only in married women, or in women exposed to sexual intercourse; he calls attention to the fact that women, who before menstruation never had anything of the kind, begin to expel these membranes afterwards.

He concludes that these membranes are abortions of some days or weeks, the mucous membrane of the uterus converted into decidua being expelled after the perishing or escape of the ovum. This occurs preferably at a menstrual epoch, and this may favour the idea that it is a simple menstrual decidua, but often the interval is longer than four weeks. The membrane is expelled commonly within six to twenty-four hours after the beginning of the hemorrhage, sometimes later, and generally after pains. There are probably various causes of the abortion, but probably the premature destruction of the embryo precedes it. The frequent catarrh of the uterine mucous membrane and chronic metritis associated with this condition are generally the consequence of it. The most essential rule in treatment is the abstinence from sexual relations for several months.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Monatsschr. f. Geburtsk.*, Jan. 1868.

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54. *Cæsarean Section.*—Dr. Testa, in an elaborate work, discusses the history, statistics, and other points; and especially investigates the following: In some cases the wound in the uterus is found after death gaping, in others closed. Testa set himself to discover upon what this difference depended. He minutely examined the muscular structure of the uterus. He found that when the incision is so made as to fall in the line of direction of the fibres, the lips of the wound will be maintained in apposition; but that when the wound cuts across all the layers of muscles, gaping must follow. The gaping will be the greater the longer the fibres are which are divided, and will increase with the uterine contractions; and since the external muscular fasciculi are longer than the internal, it is clear that the retraction of the first will predominate, and cause the divergence of the margins of the wound. Thus, he observes, that when the incision fell upon the fundus, cutting the transverse and oblique fibres proceeding from the Fallopian tubes, the wound gaped, owing to the retraction of these fibres towards their points of origin. And when the incision was made transversely from one of the sides, so as to spare the longitudinal fibres of the tubes, the edge of the wound would be drawn together. In the lower third of the uterus wounds made in the direction of the long axis would present the margins in contact, the longitudinal fibres being spared; but since the neck becomes distended and relaxed during the latter months of pregnancy, it follows that the borders of the wound are kept apart by the divided and stronger transverse fibres. The gaping would be greater if the incision were oblique, so as to divide all the orders of fibres. It is true that the anatomical structure of the middle third is the same as that of the lower third, but at this point, the

longitudinal fibres not having suffered distension, and preserving their tonicity, are fit to maintain in contact the margins of wounds made according to their direction.

The application of these researches follows:—

1. Incisions in the uterus made in the axis of the body, in the upper third, remaining open, give rise to escape of lochia into the abdominal cavity, setting up peritonitis.

2. This may be avoided by making the incision transverse and lateral, but this is to be avoided on account of the risk of dividing large vessels.

3. Oblique and longitudinal incisions in the lower third equally dispose to effusions and peritonitis.

4. Testa recommends to make the incision transversely and on one side, a little above or below the insertion of the tubes, so as to avoid an order of fibres (the longitudinal of a tube before they become oblique), and thus avoiding all obstacle to the approach and union of the lips of the wound. He relates that Dr. Cocchi, of Rome, having followed this advice, saved mother and child.

Dr. Testa then examines the various modes of applying sutures to the incised uterus. He objects to most of those proposed, and suggests one of his own. It consists in inserting two long needles at the level of the upper angle of the incision at a distance of four lines from it, from without inwards, through the abdominal parietes; then in making each needle penetrate the thickness of the corresponding lip of the uterine wound throughout the whole length, and always at the same distance from the margin; this done, the needles are brought out from within outward, at the level of the lower angle of the wound. Care must be taken not to pierce into the cavity of the womb. Then a thread is twisted round the upper ends of the needle, and another round the lower ends; the rigidity of the needles suffices to keep the edges both of the abdominal and uterine wounds in apposition. Then straps of adhesive plaster are applied. Thus parallelism is preserved within the wounds, the escape of matter into the peritoneum is avoided, and the protrusion of intestine is prevented.—*Syd. Soc. Bienn. Retrosp.* 1869, from *Annali Univers. di Medicina*, 1868.

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55 *New Method of Embryotomy.*—Dr. BARNES described and demonstrated before the Obstetrical Society, of London (June 2, 1869), a new method of embryotomy, by which a mature fœtus could be extracted through a pelvis measuring not more than an inch in the conjugate diameter. He observed that the rule of conduct justifying embryotomy was the same in extreme cases of deformity as in slighter cases. In the case of a pelvis contracted to three inches in the conjugate diameter it was justified by the presumption that by it the mother was saved from danger. So, in the case of contraction to two inches or one inch, it was on the same principle justifiable. The difficulty was to carry out the proceeding with reasonable safety to the mother. He had long felt that if the problem how to extract a mature fœtus through a pelvis narrowed to one inch without injuring the passages were put to any of our great engineers, a solution would be found. He felt that the problem ought to be solved, so that the Cæsarian section, if not eliminated, might at any rate be still further restricted. Van Huevel's forceps-saw cut up the child's head by making a chain-saw travel up from the shanks of the forceps blades. But in extreme distortion there was not room for the blades to pass. His (Dr. Barnes's) operation consisted in passing a loop of strong steel wire over the head by means of Weiss' écraseur, and then making sections. Dr. Barnes showed the operation. He regretted that a pelvis having nearly two inches in diameter had been sent instead of one with only an inch, and that he had only been able to procure a seven months' fœtus; but the operation was quite feasible under the conditions he had stated. Dr. Barnes first perforated the head, then introduced the crotchet to steady it, then passed the wire loop into the uterus, which could be done by compressing it; and when the loop was sufficiently high, by removing the compression it opened by its elasticity, and was made to seize the head in its circumference at the occipital end. Then, by working the screw, the wire made a clean section of the head, taking off all the posterior part;

this part was then removed by craniotomy forceps. Then the wire was reapplied in the longitudinal direction of the head, seizing under the jaw and ear, and another section made through the base of the skull. This was commonly enough. The remains of the head were then seized by Dr. Barnes's craniotomy forceps, and easily drawn through the pelvis. Then there was the body, often opposing great difficulty. This he overcame by perforating the chest, by hooking the crotchet in the axilla of one arm to draw it down within reach of the embryotomy scissors to cut off; then the chest walls were cut up by the embryotomy scissors and drawn through the pelvis, either cutting off the other arm previously or not. The operation had this great advantage over the old crotchet and craniotomy forceps operations—that it involved little or no pressure or contusion, or dragging upon the uterus or other soft parts. The wire buried itself immediately in the head, and no bulky instruments or manœuvres bruising the soft parts were necessary. In answers to Dr. Tyler Smith, Dr. Barnes said he had not yet performed the operation on the living subject. —*Med. Times and Gaz.*, June 19, 1869.

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56. *Prolapsus of the Uterus containing a Child between the seventh and eighth months of the Second Pregnancy.*—Mr. Wm. Allison records (*Brit. Med. Journal*, June 5, 1869) the following very remarkable case of this :—

"On March 23d, in attending upon a woman, I found the uterus, containing a child, in the bed, just as if the child had been born. After sponging off any trifles of lint, etc., from the uterus, the entire mass was carefully returned into the abdomen of the mother. On March 24th, a pessary was introduced, and each day, for three days, one of a different kind; but as all were intolerable, the woman was desired to lie or sit until labour came on. On May 2d, after a lingering labour, the child was born and is now living—a healthy man in Sheffield. In 1844, a second son was born; both he and the mother are now living in East Retford."

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57. *Blighted Twin.*—Dr. Cairns exhibited to the Obstetrical Society of Edinburgh, June 9, 1869, a beautiful specimen of a blighted twin which had been removed from a patient immediately before the birth of a living child at full term. The blighted fœtus had been arrested in its development, moulded into the form of the uterine wall, and retained, but owing to the membranes being entire it had not become putrid.—*Ed. Med. Journal*, Aug. 1869.

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58. *Asphyxia of New-born Children.*—Dr. Löwenhardt prefaces that a number of examinations of dead children, in which fruitless attempts at resuscitation had been made, taught him that what prevented the access of air was the accumulation of mucus, blood, and other fluids in the larynx and air-tubes, the result of premature efforts to respire. He further calls attention to a sure sign of life; it is the existence of pulsation in the fœtal part of the umbilical cord, which may be discovered when every other sign of life is gone. To feel this pulsation in the umbilical vessels the insertion of the cord must be seized between finger and thumb rather deeply, and in such a manner that the volar surface of the hand lies gently on the child's belly over the region of the liver. In no case, says Löwenhardt, in which this beat was not felt has the child recovered. He then describes his apparatus. It consists of a pump and a fine India-rubber tube ten inches long, with catheter openings at the end. This tube is inserted by the aid of a fine stilet into the trachea in the following way: An assistant with thumb and finger presses the neck above the larynx, closing the œsophagus, whilst the operator depresses the tongue with his forefinger, and slips in the tube. This tube is then attached to the aspirating-pump, which is used to draw out the obstructing fluids; then air is gently introduced. —*Syd. Soc. Bienn. Retrosp.* 1869, from *Monatschr. f. Geburtsk.*

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59. *Diarrhœas of Children.*—Dr. Muller discusses minutely (*Journ. f. Kinderk.*, 1868) the varieties of diarrhœa in children. First in the class of acute diarrhœa is the saburral diarrhœa of sucklings, the result generally of error of diet. He adds nothing but conjecture in explanation of the singular

change of colour of the dejections from yellow to green after been exposed to the air. As to the choice of food, the selection of a nurse, he remarks that the microscope fails to distinguish milk that may be rendered poisonous by mental emotions. As a practical rule, he thinks it important to select milk the fat globules of which are as uniform as possible in size, avoiding milk containing very large globules intermixed with others of various sizes. After much experience he concludes that pure cow's milk, sweetened with milk-sugar, used directly after milking, is the best substitute for human milk. He insists that the cows should be fed on hay only. The milk should not be watered or boiled. To preserve it from decomposition, it is necessary to prevent its exposure to air, not only to avoid oxygen, but also the sporules of fungi. It should be tested by litmus-paper, and, if found ever so slightly acid, rejected. He calls attention to a *brochure* by Folger—the artificial nourishment of infants with milk free from fungi (Münster, 1867) who describes an apparatus which secures the milk from access of air, not only during its flow from the cow's udder, but also during the sucking of it from the bottle by the child. As to medicinal treatment, Müller speaks well of calomel in small doses for the first day or two. He then describes successively—2. The saburral diarrhœa of older children. 4. The catarrhal acute diarrhœa, including the summer epidemic, the diarrhœa of dentition, and the sporadic infantile cholera. On the subject of the last Müller discusses the various opinions held concerning its pathology. The gelatinous softening of the mucous membrane of the intestinal canal occasionally found he does not regard as essential; he admits that it may be the result of post-mortem digestion, and says that, from a clinical point of view, a pathological softening of the stomach can only be inferred when, after an extremely short illness, and after the most decided and violent stomach symptoms, death has followed. But such cases are extremely rare, and in most cases where softening has been found after death no symptoms had led us to suspect such a condition during life. In treatment Müller has found nitrate of silver, one-eighth grain to one twenty-fourth grain, with sugar and gum, given four times daily, the most effectual remedy. As soon as symptoms of collapse begin, marked by paleness and a falling temperature, Müller has seen, in many cases, veratrum followed by recovery.

The Chronic Diarrhœas.—The common seat affected is the large intestine. They must be regarded as *chronic catarrh*, especially of the mucous membrane of the large intestine. Müller carefully discusses the treatment. In the form known as lienteria, in which there is such a condition of the intestinal canal that the food, quickly after ingestion, is expelled only superficially digested, Müller says nux vomica may be regarded as a specific, whilst opium is quite useless. In the common form he recognizes the value of nitrate of silver. He submits three conditions as indicating the use of this remedy: 1. Croupous deposits in the mouth and fauces, such as frequently complicate chronic intestinal catarrh. 2. A peculiar redness and smoothness of the tongue. 3. Irrepressible thirst.

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60. *Seatangle Tent.*—Dr. J. BRAXTON HICKS considers that of all the materials used for dilating the cervix uteri, there are none so cleanly, efficient, and convenient as those made from the *Laminaria digitata*.

"This material," he says, "can be made into tents of various forms and sizes, but as the dried stem of the alga usually employed does not exceed half an inch in diameter,[1] tents required of a larger size must be made by fastening together a sufficient number. They may be grouped in three, five, seven, etc. But perhaps it will be found most convenient for the very large size to combine groups of three in one large bundle; they may be tied together by twine at the base, but at their apex it will be best to employ a small elastic band. These can be obtained ready made up.

Some are made in two halves pegged together. Some are made tubular to permit the introduction of a stillet, which, passing two inches beyond the end

[1] As other larger varieties of the algæ will hereafter probably be found equally useful with the *Laminaria digitata*, it is desirable that investigations be made in this direction.

of a catheter, forms an easy contrivance for reaching the os without the speculum, and also to permit the secretions to flow through it. The smallest sort, from $\frac{1}{12}$ to $\frac{1}{8}$ inch in diameter, are used for dilating the rigid or contracted os and cervix, either alone, or preparatory to the use of the hysterotome. The tubular form cannot be made below a certain size, as it is found impossible to drill a hole through them if too attenuated.

I have found that they distend to about three times their original diameter, and that in an ordinary state of the secretions they reach their full distension in about fifteen hours; of course some variation will be found in this respect, especially between the different sizes, for the larger they are, the longer the time occupied for them to become wet in their interior, and therefore, generally speaking, the large bundles produce their effect quicker than if made of one piece of an equal diameter to the combined. These two points are important to bear in mind, because where we have to dilate the cervix to a considerable size, and we require to follow in succession, it is best to introduce the next sized tent as soon as the previous one has attained its full dilatation. To leave it in beyond that time not only delays the operation uselessly, but adds much to the chances of uterine irritation. We must therefore have at hand a series of three for general purposes. For instance, when we wish to dilate the cervix in order to pass the finger in easily into the cavity, supposing we begin with one of $\frac{1}{8}$ inch diameter; the next size should be nearly $\frac{3}{8}$ inch, and the last (if another be required) should be nearly 1 inch in diameter. As this would expand to nearly three inches at its fullest, it would not be requisite to allow it to remain in—unless in a case of pregnancy or imperfect miscarriage, where we want the fullest expansion—so long as to its complete expansion, say for ten hours. Where slight dilatation only is required then one is sufficient, and it should be removed in twenty or twenty-four hours at the longest. For dilating further, we may group the smaller bundles in any numbers we like, but it will seldom be required to go beyond an inch diameter for the last one. If we wish the tents to be more rapid, then it is best to soak them in cold water a short time before introduction."

The better plan for introducing these tents in cases where the extremely small tents are not required is, Dr. Hicks says, "to employ an elastic catheter with a stillet. A portion of the end of the cathether not quite so long as the tent should be cut off. This will leave the stillet protruding. On this the tubular tent should be passed, care being taken to see the stillet does not extend beyond the end of the tent. The string which is attached to the lower end of the tent being carried down by the side of the catheter, is held by the same hand. The arrangement is then introduced as an ordinary uterine sound; and when the tent is properly within the cervix, the stillet is withdrawn, thereby leaving the tent in the cervix. The finger which is in the vagina should be placed on the lower end of the tent to prevent it sliding out, and the sponge introduced as usual. A very convenient little instrument based on this principle has been made by Messrs. Weiss."

"It is very important," he adds, "in order to effective dilatation that the tent should pass the inner os, in all cases where the cavity of the uterus is to be explored. Tents of all kinds may fail in this particular, for two reasons: one because they may not have been introduced so far; and another, because they slip out. This is particularly the case with the seatangle tents, but as they can be made smaller than any other kinds there is no reason why, if one will not pass, a smaller should not be tried. But it must be also remembered that the cause of inability to pass a tent may be from a flexion of the organ. This point of course should be first made out before we commence to pass the tent.

"One means of preventing these tents from slipping out, at least after they begin to swell, is a plan adopted by some makers of tying the string round the lower end, so that it cannot expand so much as the upper; and this reminds me of a fault in many, namely, the shortness of the string attached to the lower end, and the imperfect security of the knot: so that it is difficult on the former account to withdraw it, and on the latter the cause of much trouble and sometimes pain when we wish to remove it.

"Before the introduction of these, as of course with all tents, it is important that the bowels be well open the day previous, and the bladder evacuated im-

mediately before. Otherwise the disturbance caused by the action of the bowels is sufficient to cause expansion of the tent; with regard to the urine, its passage will of necessity be requisite twice at least during the twenty-four hours the tent is dilating; but as it is advisable that the patient should not rise up, she should be directed to pass urine without rising: or still better, if the catheter can be employed, that it should be used.

"Upon your visit at the end of twenty or twenty-four hours the sponge plug is to be removed first, and then the tent, and the vagina syringed with warm water, to which a little of Condy's solution should be added. By this means any absorption of the unpleasant discharge (which is almost always present) through any abrasion is prevented. This is especially useful where a series of tents have to be introduced. It is not a bad plan to soak the sponge-plugs in a lotion of permanganate of potass before introduction. Some sponge-tents are made inclosing antiseptics, so that when they expand by the melting of the wax this material is set free. The same plan might be adopted in the tubular sea-weed tents, but the quantity set free would not be so much. But the tent itself, independent of the plug, does not produce much unpleasant odour, while the sponge tents do so.

"After the process of dilating the cervix by the tent, I consider it important, indeed I may say imperative, that the patient should keep quiet. In hospital practice I always enjoin a week's rest, and this plan I adopt in private, unless a couch can be substituted after a few days, for the bed. The vagina is washed gently out with warm water twice a day, to prevent accumulation of the discharges, and irritation resulting from them.

"Too much care cannot be taken after the employment of the tent, especially if done rapidly and to a considerable extent. The irritation in and around the uterus does not subside for some days—I should say a week or more, and if excitement of any sort arises, especially by exercise, this is apt to increase and become a matter of serious import. I have seen a case end fatally, where there had been dilatation a week previous; mental shock suddenly lighting up the inflammation and extending it to the peritoneum. I would, therefore, treat dilatation of the uterus as an operation of much more importance than it is by some practitioners; who, having introduced the tent at their own house, have sent the patients home, with directions to remove it in so many hours. In one such case the string broke away and the patient could not remove the tent. Severe cellulitis and metritis followed, which laid her up for many months."

The special advantages of these tents are

"1st. They can be made of any size, particularly much smaller than sponge tents.

"2d. They have more distending power. The rigidity of the inner os uteri is sometimes so great that even these tents are distinctly marked by it; but the sponge tents not at all unfrequently are unequal to produce any marked impression on the constriction.

"3d. They do not retain the secretions so as to produce so much offensiveness, consequently there is less risk of irritation locally or generally.

"4th. By their greater rigidity they can be more readily applied, especially in a tortuous canal.

"They have, however, some disadvantages:—

"Their rigidity makes them not so suitable in cases where the uterus is readily bleeding, or very tender; nor in cases where the os is somewhat dilated by a polypus or growth distending it. Here a sponge-tent is best unless the os and cervix are very rigid.

"Their great distensive force makes them less acceptable where the uterus is very irritable.

"They should be in all cases so made that no sharp edge be noticeable. In the tubular tents this is a point liable to be overlooked.

"And for the dilatation of the os uteri in a natural state for purposes of induction of premature labour, these tents are not by any means so suitable as the sponge tents, or as the India-rubber bags.

"With these exceptions, in cleanliness, certainty of action, ease of introduction, and minuteness, they are certainly not equalled by any other material at present in use."—*The Practitioner*, Aug. 1869.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Case of Congenital Absence of the Vagina and Uterus, with full Development of the External Organs of Generation and Mammary Glands. By T. L. OGIER, M. D., of Charleston, South Carolina.

Mrs. X., about four months married, placed herself under my professional care in consequence of her being affected with some imperfection of the vagina, as she and her husband supposed. On my first visit to Mrs. X., who was an interesting young woman, twenty-four years of age, about five feet three or four inches in height, with well developed breasts and of general *embonpoint*, I found, on making an examination with my hand, that the vagina was only a short pouch, about two-and-a-half inches long. I told her she was differently affected than she supposed, and made an appointment for another examination on the following day. The next day I put her thoroughly under chloroform and made the examination. The mons veneris was full and covered as usual with hair, the vulva perfectly formed, the clitoris was well developed, though not of extraordinary size; the meatus urinarius and internal labiæ were natural. Upon introducing the finger into the vagina, it was found to be only a cul-de-sac, three inches long, and very narrow at its internal extremity; no os uteri could be felt or seen in any direction. The forefinger of the left hand was now passed up the rectum, whilst the right was in the vagina: no uterus or anything like it could be distinguished. I passed a metallic bougie through the meatus urinarius into the bladder; the end of this could be distinctly felt through the parietes of the bladder and rectum, and could also be felt by pressing firmly on the pubic region. By the left forefinger in the rectum, and the forefinger of the right hand in the vagina, I found that there was a space about two inches in length between the internal extremity of the vagina and the cavity of the abdomen; this space contained no solid body, but seemed made up of cellular tissue. I felt so sure of this, that I made an incision into the tissue at the internal extremity of the cul-de-sac, and introduced a short rectum bougie into the vagina, pressing it firmly against the cut made into its extremity, and retained this in position by a bandage, thus preventing the contact of the edges of the cut. On the third day after I cut still a little deeper, applying the bougie as before. This pressure I kept up for two days; at the end of that time, I found on examination by the rectum, that there was not more than one-third of an inch between the internal extremity of the vagina and the abdominal cavity. I did not consider it prudent, therefore, to make any further incision into this tissue. I continued, however, the use of the rectum bougie without much pressure: at the end of four weeks I found that nearly one inch and a half more of vagina had been gained, making its entire length nearly five inches. The dilatation was now continued with a larger sized bougie, more to increase the width of the vagina than to increase its length; for,

as before mentioned, I considered it dangerous to decrease the thickness of the wall between the internal end of the vagina and the abdominal cavity more than had been already done.

During the six months that this lady was under my care, I examined in every way to find the rudiment of a uterus, and could not find the slightest trace. I requested my friend Dr. R. Kinloch to assist me in the examination, and after the most careful search it was evident that the uterus did not exist.

I am not aware of any mode of examination by which it can be determined with certainty that the ovaries are present or wanting, other than that of passing one forefinger up the rectum and pressing with the other hand on the iliac regions. In this examination, if the ovaries are large, or the subject thin, they can be distinguished; but in a doubtful case, where the woman is not emaciated, it is extremely difficult to find the ovaries or to say whether they exist or not; a post-mortem examination alone can determine the question. As regards the uterus the matter is different. With Sims' method of "a finger in the rectum and a sound in the bladder, alternating the latter with supra-pubic pressure," the existence or not of the uterus can with certainty be ascertained; but if the ovaries did exist in this case, they of course could not perform their peculiar functions, there being no opening anywhere for the Fallopian tubes. Prof. Hewitt, in his excellent book on the diseases of women, mentions a case coming under his care of entire absence of the uterus in a lady twenty years of age, "presenting the following conditions: pudendum, covered with hair; labia majora, well developed; vagina, represented by a mere little pit, admitting the uterine sound only half an inch; no uterus or hard body to be discovered between the bladder and rectum high up; signs of ovarian activity had been observed on two or three occasions, giving reason for the belief that the ovaries existed; the breasts were well developed."

Dr. J. Marion Sims says he has seen five cases of absence of the vagina, in all of which there was no uterus; but he does not give the details of these cases, and we do not know therefore how the physical and mental development in these women were affected by this malformation.

In the case under consideration, nothing was wanting in any of the attributes of woman, such as we find her with complete and perfect organization, except the absence of the menses and the inability to become pregnant. Sexual intercourse with her husband was agreeable and gave pleasure, as in ordinary cases. She was highly educated, an accomplished musician, a great lover of poetry, and wrote it well herself; was very fond of children, and her house and establishment were arranged with such taste as we see only when such places are presided over by an accomplished and tasteful woman.

The old and received axiom, therefore, does not apply in her case, that *propter uterum solum mulier est id quod est.*

Sulphite of Soda in the Treatment of Tinea Capitis, Crusta Lactea, and Scrofulous Otitis. By CHAS. M. WATSON, M. D., of Brookville, Pa.

December 4th, 1867, I was called to see a child six or eight months of age, with a very severe *scald head*, the entire scalp and nearly one half the forehead being covered with its characteristic incrustation. So rapid had been the progress of the disease fears were felt that a large portion of the face might become implicated before its progress could be arrested. The child was of a scrofulous diathesis but had no derangement of the stomach

or bowels; was very restless and slept but little. Considering the disease cryptogamic, I determined to try the efficacy of sulphite of soda, and accordingly ordered the following solution: ℞. Sodæ sulphit., ℥ss; Aquæ destil. Oj; with which thin linen compresses were saturated and kept constantly applied to the diseased scalp and face, the application being renewed frequently enough to keep the scabs moist. The result greatly exceeded my expectation. In a few hours the crust began to crack, become detached, and by the next evening none of it remained. The strength of the solution was then reduced one half, as the former solution caused much pain and it was thought necessary to have the solution only sufficiently strong to prevent the development of new cryptogams.

No new crust formed, and the scalp and face healed rapidly and entire recovery took place in about two weeks. No other treatment was required.

Crusta Lactea, another disease incident to childhood, particularly during the period of dentition, rapidly disappears on the application for a few days of sodæ sulphit., ℈ij; aquæ destil., glycerinæ, ää ℥ss. The parts diseased should be moistened three or four times daily.

I have found the same prescription an invaluable remedy also in scrofulous otitis. The ear should be well washed out with warm water and castile soap and dried with cotton wool, after which eight or ten drops of the solution may be dropped into the ear and the air excluded with a pledget of cotton. This should be repeated thrice daily as long as the ear discharges.

Case of Resection of the Elbow-Joint. By JAMES B. HINKLE, M. D., of Americus, Ga.

The following case may prove interesting on account of the perfect motion resulting after an extensive resection.

J. S., a negro about sixteen years of age, presented himself fourteen months since, suffering from anchylosis of the elbow-joint, the result of a fracture from a blow received several months previous. The anchylosis was not bony, but yet very firm and rigid, and the arm was straight and entirely useless. Several spiculæ of bone had recently been discharged, and there were two or more openings communicating with the joint. Examination led me to the conviction that the entire bony structure immediately adjacent was in a diseased condition.

Assisted by my friend and colleague Dr. M. D. McLeod, the patient being placed in a proper position, and thoroughly under the influence of an anæsthetic, I made a single longitudinal incision nearly three and a half inches in length, continuing the dissection down so as to fully expose the joint. The soft parts and ulnar nerve being drawn aside as well as possible, I found, as I had anticipated, all of the articulating surfaces in a carious condition. The olecranon process was now removed with the common amputating saw, after which a small chain-saw was passed around the humerus, and the entire diseased extremity, including both condyles, removed. The head of the radius and the entire diseased extremity of the ulna were then entirely removed by the bone-nippers. There being no vessels to ligate, the wound was thoroughly cleansed, and the parts closed by sutures. The arm was bandaged, and placed upon a pillow in a very slightly flexed position. Cold water applications were now ordered. The case progressed most favourably. The wound healed kindly, and at the end of two weeks I began gradually to flex the arm a little more each day,

until the hand was brought into a position to reach the mouth. In a short while the patient began gradually to use the arm, and had so far recovered its use, and with such perfect motion of the joint, as to be enabled to pick cotton last fall, and do all necessary work about a farm. In passing where he lives, a few days since, I discovered him ploughing. He says his arm is quite strong. The motion of the joint is perfect, and the arm well developed, though about an inch and a half shorter than the opposite.

Surgeons differ as to the comparative merits of the different methods of resection. As for myself, my experience has not been sufficient to make me a competent judge, having made only three resections of the elbow, and each time I employed the single longitudinal incision, with a uniformly favourable and satisfactory result. As it presents features preferable to my mind, I am of course partial to it, and my observation also leads me to believe that it is accompanied with better results than the others.

AMERICUS, GA., May 17, 1869.

Severe Burn, successfully treated by Carbolic Acid and Linseed Oil. By C. C. LANGE, M. D., of Pittsburg, Pa.

F. R., æt. 19, a moulder, last summer, while working, made a misstep, and with a whole case of hot sand slipped into one of the pits, four feet deep; the almost red-hot sand covered his legs from the knees down, and though he had on woollen socks and shoes, yet the sand insinuated itself in them and between the toes. He was removed almost immediately, and was found to be badly burned, and carried to his home. I was called to see him four hours after the accident, the friends having exhausted their skill in trying to give him relief. Found the legs covered with a black tarry-like mass, recommended by a neighbour; removing which, a greater portion of the cuticle came with it. Having cleansed the parts, I dressed them with flannel cloths soaked in eight parts of linseed oil and one of the commercial carbolic acid. At first the pain was slightly augmented, but in a few moments relief was experienced. Continued this dressing for four days, but a slight trace of suppuration appearing along the edges. At the end of this time, removed the acid dressing, substituting simple cerate, a new skin having been formed. The case did well, the burn healed rapidly.

Partial Amaurosis, developed during the course of Intermittent Fever, disappearing under treatment for this disease, and reappearing with each relapse. By T. W. HARRIS, M. D., of Farmville, Pitt County, N. C.

February 24th, 1868, Mr. B. consulted me about his wife, who, he said, was suffering from severe "agues" every day, and who, on the day before, during a very severe paroxysm, suddenly became almost blind. I gave him 12 grs. sulphate of quinia to be administered in one dose the same afternoon, but informed him I could express no opinion about the case without seeing the patient. He declined my visiting her at that time, hoping that the blindness would soon disappear. On the 2d of March Mr. B. sent again for quinia, with a request for me to visit his wife the next day.

March 3. The patient was eighteen years of age, without children, rather large, stout, well formed, and fleshy. She informed me that in July, 1867, during a violent attack of intermittent fever, she was delivered of a child one month before full term, according to her reckoning. The child lived only a few hours. Since this she had been in bad health, suffering greatly from intermittent fever all the fall and winter. In February, 1868, the

menstrual discharge failed to appear, and, the amenorrhœa continuing, she supposed herself pregnant, in which she was mistaken. I found her pale, anæmic, with serous infiltration of abdominal cavity and of the lower extremities. The dose of quinia taken on the previous day had arrested the paroxysm and she was able to be up and walk about, but her sight had improved but little or none since the beginning of the blindness on the 23d of February. She stated that, on that day, during a very high fever following a chill, she fell asleep, and when she awoke she could see nothing whatever for some time. The next day the left eye had so much improved that she could see to walk, but could not distinguish a man from a tree at the distance of twenty feet. The right eye was much the worst, not being able to see with it her hand before her face. Both eyes continued in this condition until I saw her on the 3d of March. The most careful inspection showed nothing abnormal. Examined with the ophthalmoscope there appeared to be a little congestion of the choroid in the right eye, but I could discover nothing unusual in the left. Patient had never felt any pain in the eyes except on going into the light or during fever.

I ordered blue shades to be worn constantly during the day, a blister (one inch square) over both eyes, and prescribed bark and iron for some weeks. From this time the eyes began to improve with the improvement of the general health. In one month she had almost recovered her natural acuteness of sight; but at every relapse of the fever there was a corresponding relapse of blindness, which, however, was cured by the treatment.

The blindness during the relapses was never so great as on the first attack At the present time (July 1869) patient, though a little anæmic, enjoys reasonable health and sees well enough to read, sew, and thread a fine needle, though her sight has never been completely restored. She does not require glasses.

I ought not to omit to say that the amenorrhœa which began in February, 1868, lasted for some months, but the menses finally returned after the improvement in her health.

Double Vagina. By L. FRENCH, M. D., of Davenport, Iowa.

A married lady, aged 23, informed me that her left labia was larger than the right, and asked for an explanation. By digital examination I found the enlargement evident, but was unable to discover the cause. The vagina was apparently normal and os uteri in proper position.

Oct. 21 I was called to attend her in her first labour; found her in first stage of labour; pains natural and regular but tardy. In about four hours dilatation was complete, and membranes presenting far down but to right side of mesial line. Upon examination the enlarged labia was found to extend the entire length of left side of vagina. Thinking that position might aid in changing presentation, I placed the patient upon her left side. the only effect, however, being to render the general enlargement more marked. The membranes now ruptured, and the average quantity of liquor amnii escaped, and second stage approached normally. Head presenting naturally except far to right of mesial line, in a line from left to right, diagonally downwards. As the head entered the superior straits, I discovered the lateral diameter of passage to be obstructed by a firm, non-elastic band, which was being pushed forward by the head of the child, and was the cause of presentation being so far to the right. Persevering efforts were made by position and manipulation, in hopes it would yield sufficiently to permit the passage of the head, but to no purpose. Pains

were now strong and frequent, and head passed superior strait with band still in front, and apparently unyielding.

During a severe pain I noticed a peculiar strain upon what I supposed to be the labia interna of left side, and in searching for the cause discovered a small opening between it and the labia externa, about the size of a goose-quill, and corresponding exactly with the opening in a natural hymen. It gave way upon gentle pressure, and to my surprise I discovered a second vagina, of equal capacity with the first, except near the os uteri.

This firm band that offered so much resistance to parturition now proved to be an antero-posterior vaginal septum; the cervix opening into the right side. This septum appeared to be a fold or duplicature of the mucous membrane, with a considerable quantity of cellular tissue intervening. Its attachment commenced with that of vagina to uterus, and extended half around to anterior and posterior mesial line, thence by its edges to anterior and posterior vaginal walls. Pains now became urgent, the head resting on soft parts, and patient complaining of a tearing sensation. It now became evident that the septum must be cut or left to rupture, as the child could not be born with parts in this condition. At this juncture a severe pain ruptured the septum, and labour was completed in a few moments. The laceration began about two inches from uterus, completely severing the anterior attachment to vagina, forming a mass from three to four inches long and one to two wide, which hung from the vulva by its posterior attachment. In five weeks but a trace of it was left along the posterior attachment like a cicatrix. Patient's recovery was rapid, and labia are now of equal size. Duration of labor, nine hours.

DOMESTIC SUMMARY.

Concealed Accidental Hemorrhage of the Gravid Uterus.—The *American Journal of Obstetrics* (August, 1869) contains an interesting and elaborate paper on this subject by Dr. WM. GOODELL, Physician in Charge of the Preston Retreat, Philadelphia. The author relates the following case which came under his own observation, and adds brief notes of one hundred and five examples of this rare complication.

"C. M., æt. 30, a pale-looking Irishwoman, eight years married, was admitted into the Preston Retreat, September 4th, 1866. Has had four labours at term, each requiring the forceps, and progressively increasing in difficulty, although the infants were born alive. Her last labour was the most severe, notwithstanding the child weighed much less than the others.

For six days she cheerfully performed light work, making no complaints to me, but, after her death, I learned that on the day previous to her admission she had fallen down a flight of stairs, and had since spoken of "a pain in her liver," which prevented her from sleeping on her right side. At 1 A. M., the 10th inst., she was aroused by a spasm of pain, and soon after presented the following symptoms: Countenance pale and anxious; eyes hollow; pulse frequent and thready; extremities cold; frequent retchings, purgings, and eructations annoyed her; whilst a constant agonizing pain in the right hypochondrium, increasing at irregular intervals like cramps, caused her to utter loud outcries. The cervix uteri was conical; the os dry and impervious; every symptom of labor absent. The index-finger easily reached the promontory of the sacrum, showing a narrow conjugate diameter; the abdomen was distended and tympanitic; the uterus normal in form. She attributed her sufferings to a colic

produced by a supper of cucumbers, and as they were vomited up undigested I adopted the same opinion. Anodynes were given, heat applied to the feet, and sinapisms to the abdomen. Reaction soon set in; severe pain ceased, and she quietly dozed until 6 A. M., when she suddenly became very restless and screamed with the agony. The same train of symptoms was repeated; retching, collapse, etc., and I began to mistrust the accuracy of my diagnosis; so, after giving her ether, a more thorough examination was made.

There were no appreciable labour-pains; no sensible intermittent condensation and relaxation of the uterine fibres; no dilatation of the os uteri. The uterine walls were tense and unyielding, as if under the action of one continuous labour-pain. The placental murmur was just perceptible, but all the fœtal sounds were absent. I now began to suspect the existence of a concealed hemorrhage, and, sending for assistance, plied anodynes, stimulants, heat, and ether enough to lull the pain.

At 10 A. M. a small gush of sanguinolent serum took place, followed by a constant dribbling of the same fluid. This I took to be the waters, but, upon examination, found the membranes tense and entire, and the os now dilated to the size of a silver quarter, but with an extremely sharp and rigid edge, in which condition it remained for many hours. This discharge gave great relief; she rallied, lay quietly, and eagerly took some nourishment. In this improved state she continued until 5 o'clock P. M., when, during my momentary absence, insisting upon rising to empty her bowels, the membranes burst, and she began to flood. At this moment Dr. A. H. Smith opportunely arrived. The prostration now ensuing was so complete that the os immediately relaxed, whilst the uterine and abdominal walls became so flaccid that the outlines of the child's body and extremities could be traced by the eye; in fact, the position of the head was thus determined, for the fontanelles were beyond a discriminating reach. Dr. Smith applied the forceps, but no traction on his or my part could make the head engage. During these efforts the flooding persisted, whilst the struggles and shrieks of the poor creature were so distressing that ether was resorted to. The head was therefore opened, and even then with difficulty delivered, whilst the shoulders demanded the use of the blunt hook. A fearful gush of grumous blood followed the delivery; and the detached placenta, together with a basin full of old clots, was immediately removed. The uterus, in spite of ice, friction, and galvanism, remained as limp as a wet rag; indeed, so extremely flaccid, that while the hand was within the uterine cavity to stimulate contraction, the form of the fingers, and the intervals between them, could be seen through the abdominal walls. No further hemorrhage, however, took place, as the woman was completely drained, and she quietly died at 7½ o'clock P. M., about twenty minutes after delivery, and eighteen hours after the first attack. The placenta was large, flattened, and, upon its uterine surface, studded with clots which dipped down into its substance. The child lacked a month of full term, was thoroughly blanched, and weighed, without the brain, seven pounds and two ounces.

Autopsy: The posterior tips of the pubic bones at the symphysis were prolonged into two processes, forming a re-entrant angle; whilst the promontory of the sacrum was sharp and projecting, narrowing the conjugate diameter to barely three and a half inches. An inch below the symphysis, on the right descending pubic ramus, a sharp exostosis jutted out; whilst another occupied a point on the ileo-pectineal line, near the right sacro-iliac junction; both still further diminishing the capacity of the pelvis. To add to these complications, the pubic rami formed a Saracenic, in lieu of the normal Roman arch. The uterus was healthy, but blanched and flaccid; the placental disk situated on its right postero-lateral surface, which accounted for the absence of any lateral bulging of the uterus as one of the symptoms. At points corresponding to the promontory and to the exostoses, several ecchymosed grooves were ploughed out, on the internal surface of the womb, by the pressure of the child's head. Upon the anterior peritoneal surface of the womb was found a fissure, about an inch and a half in length, so neatly divided as if cut with a knife; but no blood had collected in the abdomen."

An analysis of the cases collected by Dr. G. shows, he says, the importance

of early interference. "So soon as an accurate diagnosis is made out, the rule should be imperative to deliver the woman as soon as possible, and thus lessen the bleeding surface; for as the hemorrhage is a concealed one, it is safer to act on the assumption that it will continue until the birth of the child or the death of the woman. By simply piercing the membranes the same benefit may not accrue as in the franker forms of accidental hemorrhage. In the latter, by an early evacuation of the waters the hemorrhagic area is rapidly diminished. In concealed flooding this drainage will affect nothing, should the adherent margin of the placenta not yield; and indeed even if the placenta should become detached the blood may go on accumulating behind the membranes until it shall fill up the space originally occupied by the liquor amnii, thus rendering the condition of the woman still more perilous. To avoid this danger, after perforating the membranes a very tight binder and compresses should be applied over the abdomen to prevent any further distension, whilst other means are resorted to.

"This method of treatment has been questioned by no less authorities than Baudelocque, Puzos, and others, who contend that the waters should not be drained off, or the womb emptied of its ovum, unless labour-pains be present or can be aroused, and the os be sufficiently dilated to admit the hand. The former eminent obstetrician supports this opinion by the following fallacious dictum: 'The hemorrhage cannot become so great as to effect such changes in the volume of the womb, without causing the expulsive action to be keenly solicited, and this soon responds by pains first resembling and ultimately becoming true labour pains.' * * * * But an analysis of the cases here collected proves the contrary, and lays down as axioms: (*a*) that the greater the hemorrhage, the greater will be the syncope; (*b*) that the pains of labour will become feeble in direct proportion to the severity of the collapse; (*c*) that consequently they are generally absent in the worst cases of hemorrhage, and cannot be aroused by the most powerful stimulants and oxytocics, so long as the uterus is over-distended; (*d*) but that when the membranes are pierced the vital contractility of the uterine walls condenses them, and usually provokes their organic contractility, unless the system be too far depressed.

"It is well to recollect that in some cases there are feeble but intermittent condensations of the uterine fibres, which have undoubtedly been mistaken by observers for labour-pains. But these closely resemble those false labour-pains which only affect the fundus, and do not dilate the os uteri; they are merely instinctive efforts on the part of nature to resent the presence of intruding clots. In the majority of cases of internal flooding, the os dilates passively; but this is due not to the natural consequences of labour, but simply to the flaccidity of the cervix and surrounding tissues, resulting from the state of collapse, and also to the *vis a tergo* of an excessive uterine distension. Hence it follows that the dilatation of the os, in the absence of labour-pains, is in itself a speaking evidence of a serious hemorrhage. Under such circumstances it therefore behooves us not to rely upon nature to accomplish this dilatation, but to rupture the membranes early, apply the binder, and, if necessary, introduce Barnes' dilators, which are in fact more efficient than the bag of waters for rapid expansion of the os, and will obviate any necessity for incising the margin of a rigid os.

"If the os be dilatable, immediate delivery should next be attempted, either by the long forceps or by version. Each measure will have its advocates; but here, in our opinion, version by the feet meets all the requirements, and is decidedly preferable to the forceps; especially as the child very universally perishes at an early stage of the accident, and therefore no considerations for its safety are to embarrass the efforts at a speedy delivery. If the practitioner have attended his patient in previous labours, and know that her pelvis is ample, he is warranted in applying the forceps, provided there will be no delay in dragging the head through an imperfectly dilated os, and no subsequent detention at the perineum. Under the most favourable circumstances a delivery by the forceps is always accompanied by more or less delay. Should the head become locked at the brim, as in my own case, or in the pelvic cavity, the physician would indeed have every reason to regret that the uterine cavity had not

been previously emptied as much as possible, both by the delivery of the child's body, and by the extrusion of all the clots which the operation of version would necessarily involve.

"In all other dangerous complications of labour requiring immediate delivery, version deservedly holds the first rank, because, by the bi-manual method, it can be resorted to at a much earlier period than the forceps. I have here, however, designedly placed these two operations on the same level as regards time, for when the hand can pass the os uteri, the forceps can often be applied; and in my opinion, to perform version in a case of concealed flooding, the whole hand will require to be introduced, from the fact that the bulging in of the placenta or membranes, by the extravasation behind them, would present a ledge over which the breech or body of the child could not be made to glide by the feebler purchase of the bi-manual method of version.

"As ergotism cannot be induced in cases of grave hemorrhage, ergot should be freely given, in order to counteract the tendency to relaxation of the uterine fibres, and to provoke true labour-pains after the rupture of the membranes. If, however, version be demanded, it may be prudent to withhold this drug until that operation has been performed. Of course, active stimulants, opium in full doses, beef-tea, etc., must not be spared. Warmth to the cold extremities is very grateful, and by derivation is often useful in arresting hemorrhage; perhaps, according to Chapman's theory, it would prove still more efficacious if applied also to the spine.

"Finally, whenever the symptoms are obscure, and the diagnosis doubtful, act as though the case were one of concealed hemorrhage, and follow the precept laid down by Thodore Mayerne for the management of floodings, '*præstantissimum remedium est fœtûs extractio.*'"

Bony Union of Fracture of Cervix Femoris.—Dr. Sands presented to the New York Pathological Society, May 26, 1869, a very interesting specimen of this. While visiting the Bloomingdale Asylum a year ago, his attention was drawn by Dr. Brown to a lady patient aged sixty-three, long an inmate of the institution, who was more or less lame. Having been previously free from lameness, she, on one occasion about a year before, fell from a chair, striking upon the trochanter of the right side. She was placed in bed, and considered by the gentleman who saw her (Dr. Brown's assistant) as probably suffering only from contusion. As the lameness had continued from that time, Dr. Sands was asked to look at the case. After an examination he became satisfied that there had been a fracture at the neck of the thigh-bone, as the result of the fall. He was led to this opinion by the presence of eversion of the foot, but more especially by marked shortening of the limb (about an inch or more), and by continued lameness, with absence of all other signs of injury. He expressed surprise that she should recover so well from it. She died lately, and Dr. Brown had been kind enough to procure the specimen and send it to him.

The specimen consisted of the upper portion of the shaft of the femur, including the head, neck, and trochanters. It was very evident that the appearances of the part were abnormal, even before section, and that such were not due to disease but to injury. The head and neck of the bone were shown to have undergone a remarkable change in relative position, the former having dropped down about an inch. On further examination it was also evident that an injury had taken place through the neck of the bone. On the anterior aspect of the neck, about midway between the edge of the articular cartilage and the anterior intertrochanteric line, a prominent ridge of bone was seen, which, on examining the section, indicated the line of fracture as it took place in that situation. Behind, the cervix appeared absent, the posterior intertrochanteric line being almost in contact with the femur, just where it joins the neck. The two portions of the neck were united at a very obtuse angle, and in such a way as to explain the eversion of the limb below.

The line of fracture was certainly within the ligament in front, and he was of the opinion that it was within the same behind. The line of fracture was peculiar. Beginning behind, a line ran inwards and forwards to about the middle of the neck of the bone. It then ran backwards and upwards to the anterior sur-

face of the neck, making two lines which formed an acute angle with each other.

That portion connected with the trochanter presented a sharp ridge, which caused the fracture to be impacted.

On close inspection it was found that bony union was not complete throughout the whole extent of the line of fracture, there being an evident solution of continuity along the posterior line of fracture, which sloped forwards and inwards from the posterior surface of the cervix. On the other hand, there was no interruption whatever along the anterior line of fracture. There the bony union was complete, and it was doubtless due to this fact that the patient had such good use of the limb subsequent to the injury.

In conclusion, he remarked that he always made it a rule never to attempt to get crepitus in a case of suspicious impacted fracture of the cervix. He was satisfied to make a diagnosis on the ground of the existence of lameness of a persistent character, with eversion of the foot and shortening. He believed that if the relation of the parts when impacted was forcibly disturbed by unwise attempts to get the crepitus, all hopes of union must be at an end, while only such cases did unite which were in the first instance impacted, and in the second instance not meddled with.—*Medical Record*, June 15, 1869.

Removal of Superior Maxillary Nerve with the Ganglion of Meckel, and the Inferior Maxillary Nerve, for Persistent Facial Neuralgia.—Dr. WM H. MUSSEY records (*Cincinnati Lancet and Observer*, Aug. 1869) a case of this. The subject of it was a man, æt. 32, who had suffered for five years with neuralgia, during which time he had been subjected to all kinds of medical treatment. After consultation with Dr. Foote, it was decided to operate after the plan of Dr. Carnaghan; and it was accordingly performed on the 11th June. "The wound healed by first intention, leaving no deformity whatever, and the patient for a time was entirely free from pain, although exposed to the bleak winds from across the lake. Occasionally, however, there have been paroxysms of pain in the temple, which are now diminishing in strength and frequency, as I learn from the patient, who writes that 'the operation is a complete success.' At present I cannot be positive of the result."

Remarkable tolerance of Opium.—Dr. D. MCGILLIVRAY records (*Canada Medical Journal*, Feb. 1869.) a remarkable case of this. The subject of it was a man æt. 37, stout, muscular, and plethoric, of intemperate habits. He had been addicted to taking opium for nearly three years, and the habit had gone on increasing until it had acquired extraordinary magnitude. On one occasion Dr. M. saw him swallow a drachm of sulphate of morphia in half a tumblerful of whiskey, and in the course of fifteen or twenty minutes afterwards four ounces of laudanum. An hour after this he spent the evening in the theatre and enjoyed the drama. At eleven o'clock the same evening he took a quarter of a drachm of morphia in whiskey, went to bed, and awoke the next morning without experiencing any ill-effects from the medicine. "His love for ardent spirits was so strong, his appetite for opium so uncontrollable that he must still indulge in the use of these insidious poisons which he knew were undermining his system slowly but surely, and as an inevitable consequence nature yielded to their pernicious influence; an attack of delirium tremens supervened and death closed his sad career."

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The course will embrace the most important subjects of Ophthalmic Science, including the *Anatomy of the Eye, the Physiology of Vision, Ophthalmoscopic Diagnosis, Optical Defects of Vision, and the Pathology and Operative Surgery of the Eye.*

Instruction will be made demonstrative with abundant material for illustration, by dissections, models, drawings, and optical apparatus.

Attention will be given to the instruction of each member of the class in the practical use of the Ophthalmoscope, and in the practice of Ophthalmic Surgery on the cadaver.

Clinics for Diseases of the Eye are held daily, and the Operative Clinics of the Hospital will present an extended field for observing the operative surgery of the eye.

Fee for the Course . . . . . Ten Dollars.

R. J. LEVIS, M. D.,

Surgeon Wills Hospital, N. W. cor. Arch and 13th Street, Phila.

UNIVERSITY OF NASHVILLE.

DEPARTMENT OF MEDICINE AND SURGERY. 1869–70.

FACULTY.

William K. Bowling, M. D.,	Professor of the Theory and Practice of Medicine.
Charles K. Winston, M. D.,	Professor of Obstetrics, and Diseases of Women and Children.
J. Berrien Lindsley, M. D.,	Professor of Chemistry.
William T. Briggs, M. D.,	Professor of Surgery.
Thomas L. Maddin, M. D.,	Professor of the Institutes of Medicine.
William L. Nichol, M. D.,	Professor of Clinical Medicine, and Diseases of the Chest.
John H. Callender, M. D.,	Professor of Materia Medica and Therapeutics.
Thomas B. Buchanan, M. D.,	Professor of Anatomy.
Van S. Lindsley, M. D.,	Professor of Surgical Anatomy.
Henry M. Compton, M. D.,	Demonstrator of Anatomy.

The Twentieth Course of Lectures in this Institution will commence on Monday, the 1st of November next, and continue until the 1st of the ensuing March.

A *Preliminary Course* of Lectures will be given by the Professors, commencing on the first Monday of October. Five lectures will be given daily, on subjects not fully discussed in the regular session.

The Anatomical Rooms will be opened for students on the first Monday of October. Special attention is paid to this department, so that the facilities for the study of practical anatomy are not surpassed anywhere.

For Clinical instruction, both medical and surgical, ample provision is made by the establishment of St. Vincent's Hospital, near the College, and under the control of the Professors.

FEES.

Full Course of Lectures	$140
Matriculating	5
Dissecting	10
Graduating	30

For additional information apply to J. BERRIEN LINDSLEY, M D.,
Dean of the Faculty.

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, consists of the following Physicians:—

John Jeffries, M. D.	D. H. Storer, M. D.	Henry J. Bigelow, M. D.
S. D. Townsend, M. D.	Charles G. Putnam, M. D.	Richard M. Hodges, M. D.
J. B. S. Jackson, M. D.	Morrill Wyman, M. D.	Calvin Ellis, M. D.

At the Annual Meeting of the Committee, it was voted that no dissertation on either of the subjects proposed for the year 1869 was considered worthy of a prize.

The following are the questions proposed for 1870:—

1. *The Modern Pathology of Tumors.*
2. *Aphasia, or the Relation of the Brain to Speech.*

The author of the best dissertation considered worthy of a prize, on either of the subjects proposed for 1870, will be entitled to a premium of *two hundred dollars.*

Dissertations on these subjects must be transmitted, postpaid, to John Jeffries, M. D., *on or before the first Wednesday in April*, 1870.

The following questions are proposed for 1871:—

1. *Criticisms on the recent opinion of a medical writer that the less serious Diseases of the Ear may be successfully treated by a well-qualified general practitioner, and the more serious affections by none.*
2. *Recent advances in the Pathology and Treatment of Cutaneous Disease.*

Dissertations on these subjects must be transmitted as above, on or before the first Wednesday in April, 1871.

The author of the best dissertation on either of the subjects proposed for 1871 will be entitled to a premium of *one hundred and fifty dollars.*

Each dissertation must be accompanied by a sealed packet, on which shall be written

BOYLSTON MEDICAL PRIZE QUESTIONS—Continued.

some device or sentence, and within which shall be inclosed the author's name and residence. The same device or sentence is to be written on the dissertation to which the packet is attached.

The writer of each dissertation is expected to transmit his communication to the President, John Jeffries, M. D., in a legible handwriting, and with the pages properly secured together, within the time specified.

All unsuccessful dissertations are deposited with the Secretary, from whom they may be obtained, with the sealed packet unopened, if called for within one year after they have been received.

By an order adopted in 1826, the Secretary was directed to publish annually the following votes:—

1st. That this Board do not consider themselves as approving the doctrines contained in any of the dissertations to which premiums may be adjudged.

2d. That in case of publication of a successful dissertation, the author be considered as bound to print the above vote in connection therewith.

HENRY J. BIGELOW,
Secretary.

Publishers of Newspapers and Medical Journals throughout the country are respectfully requested to notice the above.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT, BOSTON, MASSACHUSETTS.

EIGHTY-SEVENTH SESSION, 1869–70.

WINTER COURSE OF LECTURES.

The regular Course of Lectures will be given at the Medical College, in North Grove Street, Boston, commencing on the first Wednesday in November, and continuing four months. Full instruction is given in the following departments, viz., Anatomy and Physiology, Physiology, Comparative Anatomy and Physiology, Pathological Anatomy, Chemistry, Materia Medica, Obstetrics, Surgery and Clinical Surgery, Clinical Medicine, Theory and Practice of Medicine, Ophthalmology. Lectures are also given on Psychological Medicine, Dermatology, Botany, Physics, and Zoölogy.

FACULTY OF MEDICINE.

CHARLES W. ELIOT, A. M., President.

JOHN B. S. JACKSON, M. D., Shattuck Professor of Morbid Anatomy, and Curator of the Anatomical Museum.

OLIVER W. HOLMES, M. D., Parkman Professor of Anatomy and Physiology.

GEORGE C. SHATTUCK, M. D., Hersey Professor of Theory and Practice of Physic.

JEFFRIES WYMAN, M. D., Professor of Comparative Anatomy and Physiology.

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JAMES C. WHITE, M. D., Adjunct Professor of Chemistry, and Lecturer on Diseases of the Skin.

DAVID W. CHEEVER, M. D., Adjunct Professor of Clinical Surgery.

——— ———, Professor of Physiology.

CALVIN ELLIS, M. D., *Dean of the Faculty.*

During the Winter Course, in addition to Didactic Lectures, Clinical Instruction will be given at the Massachusetts General Hospital, the City Hospital, and at other special Hospitals and large Dispensaries. A very large number of surgical operations are performed before the class. Special instruction is given in the uses and purposes of the Microscope, Stethoscope, and Laryngoscope. Clinical Conferences are also held, at which students are practised in observation, diagnosis, prognosis and treatment, under the guidance of professors and hospital physicians and surgeons.

FEES.—The fee for instruction for the Winter Lectures, $121. The fee for the entire year, for the Winter Lectures as well as for the Summer Session, is $200. The fee for Graduation is $30. The fee for Matriculation is $5; this is appropriated to the increase of the Library, and is to be paid to the Dean once by all who desire to become members of the College.

INSTRUCTION IN OPHTHALMOLOGY AND OTOLOGY.

DR. H. KNAPP, in New York, lately Professor in the University of Heidelberg, will give, during the coming winter, the following courses of instruction at the New York Ophthalmic and Aural Institute, No. 46 E. Twelfth Street:—

1. A COMPLETE COURSE OF DIDACTIC LECTURES ON ALL SUBJECTS RELATING TO OPHTHALMIC AND AURAL SCIENCE. Three times a week. Fully illustrated by anatomical preparations, physiological apparatus, models, surgical instruments, and by selected cases of disease.

2. A CLINICAL AND PRACTICAL COURSE ON THE DISEASES OF THE EYE AND EAR. Three times a week, from 2 to 4 o'clock.

The Students of either course will also have the privilege of attending the daily clinique in the Dispensary of the Institution.

The above courses will begin in the third week in October, and terminate the second week in March.

FEES.—For both courses thirty dollars, in advance; for either course separately twenty dollars.

H. KNAPP,
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Although all the subjects are well treated, those on vomiting, heartburn, flatulence, intestinal digestion, and constipation will be valued for the great amount of practical good sense they contain. The same may be said of some remarks in the appendix on artificial digestion as a means of dissolving meat for producing an article of nourishment for the invalid. To the practitioner and the student who cannot spare the time for the study of the more elaborate treatises, this work, on one of the most important of subjects, will be a welcome, handy, suggestive, and practical help.—*N. Y. Med. Record*, Sept. 1, 1869.

We hope it will have the large circulation which it merits.—*Am. Journ. Med. Sciences*, July, 1869.

We know of no better guide to the study of digestion and its disorders than this little work of Dr. Pavy.—*St. Louis Med. and Surg. Journal*, July 10, 1869.

We do not know of any work that contains in so small a compass, so clear, connected and complete a view of the topics embraced in its title, as this volume. It is pleasantly put together by the author, and pleasantly served up by the publisher, and will be pronounced by the average reader, we are quite sure, a very satisfactory book. It is excellent reading for students in or out of the profession, for any one can understand it.—*Pacific Med. and Surg. Journ.*, July, 1869.

This is a most admirable book, and cannot fail to interest every practitioner of medicine. It contains a discussion upon all the general and special symptoms and conditions in digestion, and also contains valuable instructions as to the best modes of treating it.—*Buffalo Med. and Surg. Journal*, June, 1869.

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